



地学新书资源推介

国际天然气水合物专题
2024年7月

中国地质图书馆
(中国地质调查局地学文献中心)

编者按

《地学新书资源推介》是中国地质图书馆以“围绕国家重大需求和地质调查中心工作，充分发挥地学文献服务支撑作用”为目标，瞄准地调局业务布局中的科技需求，调研国内外地学文献资源动态，努力采集最新最全的国内外地学文献资源，为广大地质工作者和科研人员提供文献资源资讯。

天然气水合物分布于深海或陆域永久冻土中，其燃烧后仅生成少量的二氧化碳和水，污染远小于煤、石油等，且储量巨大，因此被国际公认为石油等的接替能源。天然气水合物作为一种未来能源，其开发和利用对能源安全、环境保护、全球气候变化的缓解具有重要意义。

为了系统了解国际天然气水合物的整体研究态势，本期推介围绕国际天然气水合物的近年来的研究进展，在 Web of Science 数据库中收集 2014-2023 年国际天然气水合物论文 9490 篇基础上，运用文献计量学理论和方法分析国际天然气水合物论文情况。包括论文增长趋势，论文数量国际对比、论文领域和期刊分布、高产机构等。研究成果有助于了解国际天然气水合物的整体研究态势，以期对相关研究的开展提供支撑。

本期推介由中国地质图书馆文献资源室卢小莉、吕鹏、向锂、洪敬兰、蔡秀华、张孟伯、柴新夏、李璐等编写完成，由于水平有限，编写过程中难免纰漏，不足之处，敬请领导专家和读者批评指正。

编写过程得到中国地质图书馆赵可录副馆长等领导 and 专家的大力支持和帮助，在此我们表示衷心感谢。

国际天然气水合物研究态势文献计量分析

摘要：作为一种新型的潜在能源，天然气水合物呈现出极高的资源价值，一直是油气工业界长期研究热点。本文在 Web of Science 数据库中收集 2014–2023 年国际天然气水合物论文 9490 篇基础上，运用文献计量学理论和方法分析国际天然气水合物论文情况，量化分析国际天然气水合物的研究态势。研究结果表明国际天然气水合物研究论文增长速度很快，呈现出快速发展的态势，中国、美国和日本是论文总数排序前三的国家，从单年论文数来看，中国已经成为年发表论文数最多的国家。发表论文数最多的机构是中国科学院，共发表论文 868 篇。被引次数大于 10 次的论文共有 4369 篇，占论文总数的 46.04%。出现频率最高的三个关键词为减压 (Depressurization)、动力学 (Kinetic)、南海 (South China Sea)。研究结果为系统掌握国际天然气水合物研究态势提供有效支撑。

关键词：天然气水合物；研究态势；文献计量

1 引言

天然气水合物是指天然气和水高压低温条件下形成的类冰状的结晶物质，是一种新型的潜在能源，主要是分布于深海沉积物或陆域的永久冻土中^[1]。相关研究表明全球约 90% 的海洋和 27% 的陆地中都含有天然气水合物，资源密度高，全球分布广泛，且其含有的甲烷是一种非常清洁的能源，具有极高的资源价值。所以对天然气水合物的研究成为油气工业界长期研究热点，其成果也呈现出快速增长的态势。

现有关于天然气水合物的研究涉及到多个方面，且取得了重要进展。但是这些研究成果多数是侧重于单方面的理论或技术，关于天然气水合物文献研究进展和总体态势的研究还较少。史斗和郑军卫在回顾世界天然气水合物研究历史的基础上，采用文献综述的方法分析了世界天然气水合物研究现状和开发前景^[2]。雷怀彦和王先彬从形成条件、资源分布、勘探开采方法等维度综述了天然气水合物研究进展，并总结了未来研究挑战^[3]。孙志高等人介绍了天然气水合物在相平衡和动力学方面的研究进展，并指出了天然气水合物今后的研究方向^[4]。张洪涛等人系统分析了中国在天然气水合物方面的调查情况和研究情况，并尝试利用文献计量的方法来分析中国天然气水合物的历史演化和发展趋势^[1]。吴传芝等人分析

天然气水合物开发研究的态势^[5]，吴青柏专门针对多年冻土区天然气水合物的研究进行总结^[6]。王秀娟等人研究了天然气水合物与游离气共存的地球物理特征与识别^[7]。靳佳澎分析了南海北部多类型天然气水合物成藏特征与赋存差异^[8]。这些关于天然气水合物研究态势的总结成果很好地反映了相应阶段的研究进展，为指导后续研究提供了有力参考。但是这些态势分析成果基本上是基于文献综述来开展的，涉及到的文献数量有限，没有能全面系统分析国际天然气水合物研究态势。

针对这个问题，有研究人员尝试运用文献计量学理论和方法，从研究论文着手量化分析天然气水合物的研究态势。郑军卫和史斗收集了 SCI 数据库和 INSPEC 数据库中 1995-2005 年发表/申请的有关天然气水合物的研究论文和专利，从论文数量、国家、机构和作者分布等维度量化分析了天然气水合物的研究态势^[7]。张洪涛等人系统分析了中国在天然气水合物方面的调查情况和研究情况，并尝试利用文献计量的方法来分析中国天然气水合物的历史演化和发展趋势^[1]。李桂菊等人利用 SCI 数据库中 1990-2010 年全球关于天然气水合物研究论文，量化分析了研究主题、国家和机构分布以及不同国家机构研究主题的特色等内容^[8]。

这些从文献计量学角度开展的研究为丰富天然气水合物态势分析提供了很好的参考。但是这些研究成果分析的时间较早，没有能反映出近年来天然气水合物快速发展态势。此外，相关研究成果分析的维度还可以进一步丰富，如增加论文引用情况分析，不同国家论文的增长对比分析等。

因此，本文在收集 2014-2023 年国际发表的关于天然气水合物研究论文的基础上，运用文献计量学理论和方法，进一步量化分析国际天然气水合物研究态势，包括论文增长趋势，论文数量国际对比、论文领域和期刊分布、高产机构、论文被引情况和研究主题分布等。研究结果有助于系统了解国际天然气水合物的整体研究态势，为指引相关研究的开展提供支撑。

2 数据来源与研究方法

Web of Science 数据库是目前利用最为广泛的论文与引文数据库，共收集了超过 2 万种期刊，其收录的论文包括 71 个字段，信息全面，是进行文献计量学分析的理想数据源。本文依托于 Web of Science 数据库，检索出 2014-2023 年共十年期间国际天然气水合物研究论文，进行文献计量分析。

在检索的过程中，在借鉴和参考已有相关成果的基础上，明确主题检索式为

TS=((“gas hydrate*”) OR (“methane hydrate*”) OR (“hydrate*” AND “clathrate*”) OR (“BSR” AND “clathrate*”) OR (“hydrate*” AND “clathrate*”) OR (“bottom simulating reflect*” AND “clathrate*”)), 限定 SCI-expanded 和 SSCI 两个数据集, 文献类型和文献语种不限, 共检索出相关研究论文 9490 篇。

3 论文增长趋势与类型

数据表明 2014-2023 年国际天然气水合物研究论文数量增长很快, 2014 年全球共有论文 677 篇, 2019 年突破 1000 篇达到 1018 篇, 而到 2023 年已经增长到 1208 篇。10 年间论文增长 1.78 倍, 平均每年增长 5.96%, 具体增长趋势如图 1 所示。

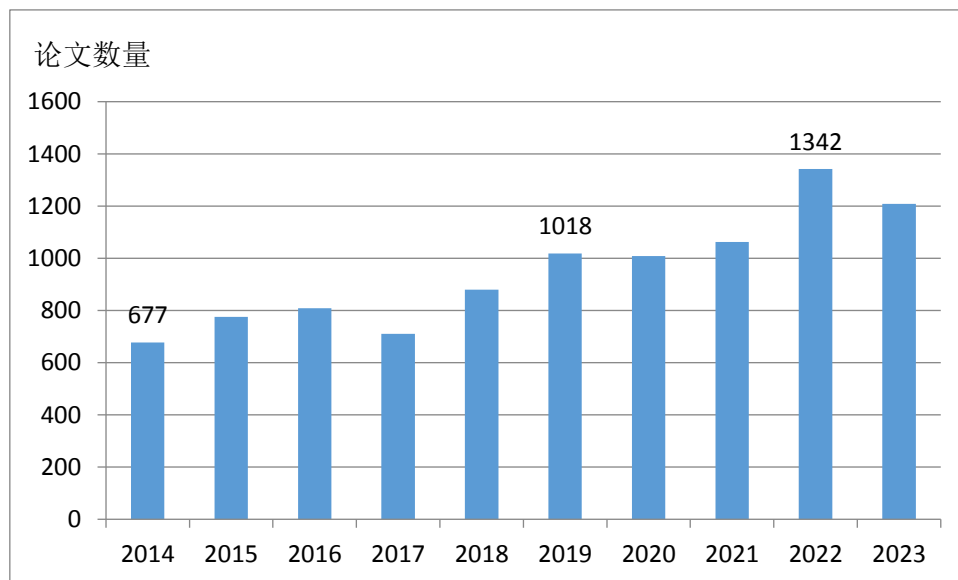


图 1 2014-2023 年国际天然气水合物论文增长情况

进一步细分论文的类型发现, 其中 Article 论文是主要形态, 共有 8202 篇, 占比为 86.43%。结果还表明有一批论文先在会议上宣讲然后发表在期刊上, 共有 136 篇, 占比 1.43%。具体论文类型分布数字见表 1。

表 1 2014-2023 年国际天然气水合物论文类型

论文类型	论文数量	占比 (%)
Article	8202	86.43
Article; Book Chapter	2	0.02
Article; Early Access	84	0.89
Article; Proceedings Paper	136	1.43
Article; Proceedings Paper; Retracted Publication	1	0.01

论文类型	论文数量	占比 (%)
Article; Retracted Publication	2	0.02
Correction	32	0.34
Editorial Material	60	0.63
Editorial Material; Early Access	1	0.01
Letter	5	0.05
Meeting Abstract	53	0.56
Proceedings Paper	537	5.66
Retraction	4	0.04
Review	361	3.80
Review; Book Chapter	3	0.03
Review; Early Access	6	0.06
Review; Retracted Publication	1	0.01
总计	9490	100

4 论文数量国际对比

为了对比分析不同国家或地区发表论文数量，抽取了论文中作者所属国家或地区字段进行统计，图 2 显示的是发文数量前 20 的国家或地区论文情况。

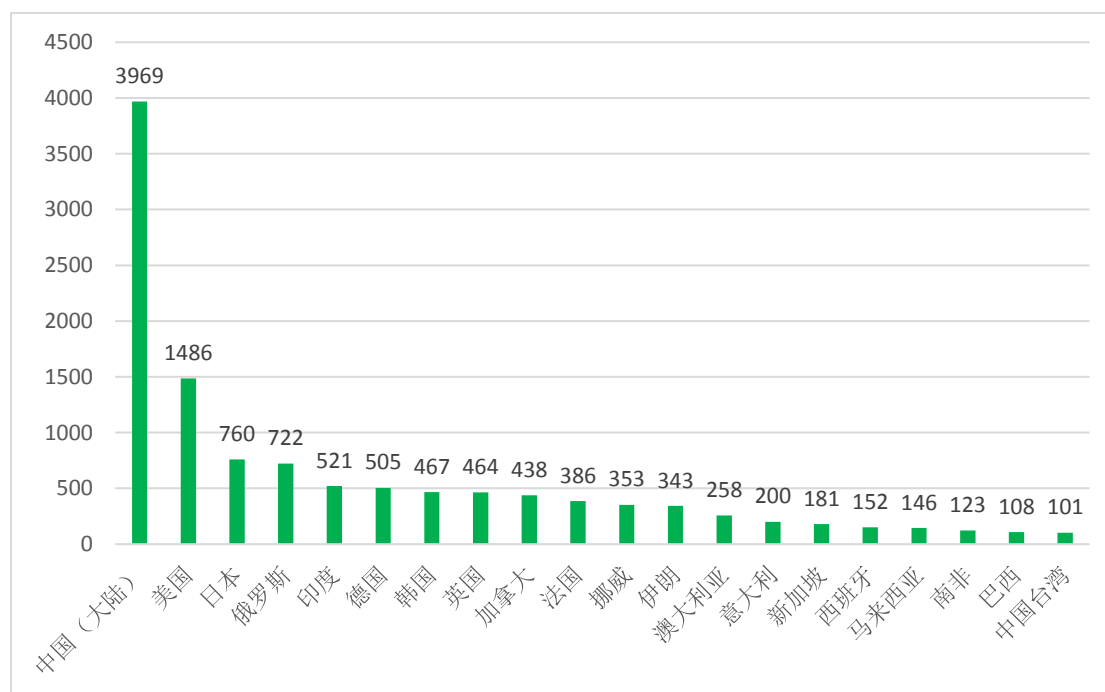


图 2 2014-2023 年国际天然气水合物发文前 20 国家或地区

图 2 中结果表明，国际天然气水合物发文数量最多的国家是中国，论文数量为 3969 篇；美国发表的论文为 1486 篇，排世界第 2 位。从结果中发现，发文数量排序靠前的国家和地区多数是发达国家或地区，排序前 4 个国家或地区中只有

中国一个发展中国家。此外，不同国家或地区之间论文数量差异较大，排序第一的中国（大陆）发文数量是排序第十法国的 10.28 倍，是排序第二十中国台湾的 39.3 倍。进一步选择论文总数前 5 个国家，分析不同年份论文增长情况，具体如图 3 所示。

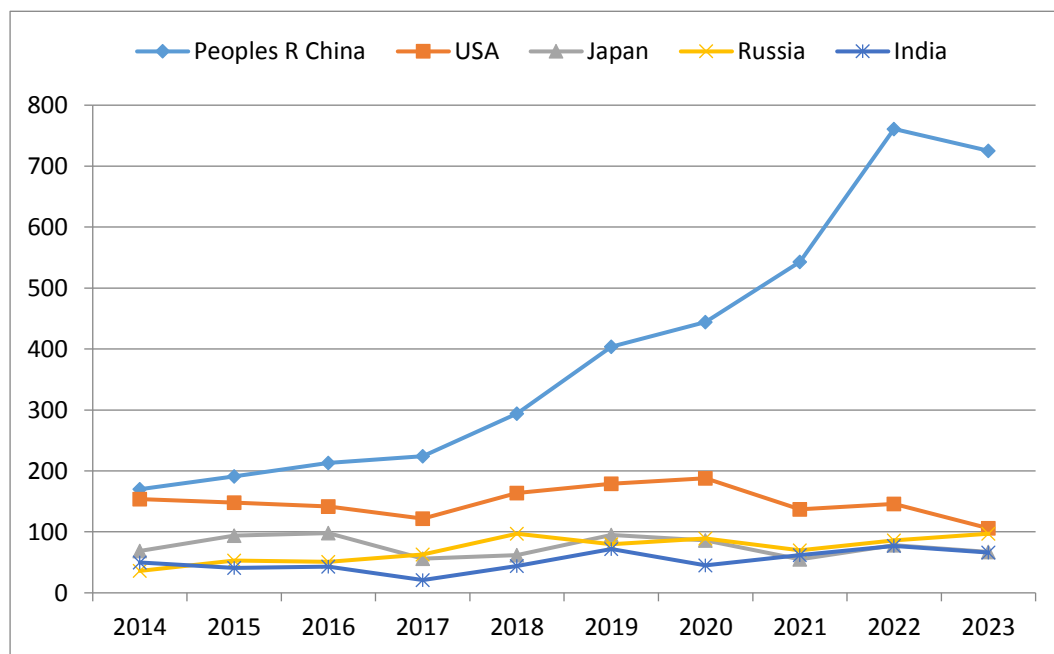


图 3 国际天然气水合物发文前 5 国家或地区论文增长对比情况

从图 3 中可以看出，五个主要发文国家天然气水合物论文数量一直较为稳定。中国天然气水合物论文数量增长最快，2014 年只有 170 篇，后续一直持续快速增长，和发达国家相比，也处于领先地位，且论文数量优势逐年加大。这与中我国近年来加大天然气水合物研究和调查方面的投入密切相关。

4 论文领域与期刊分布

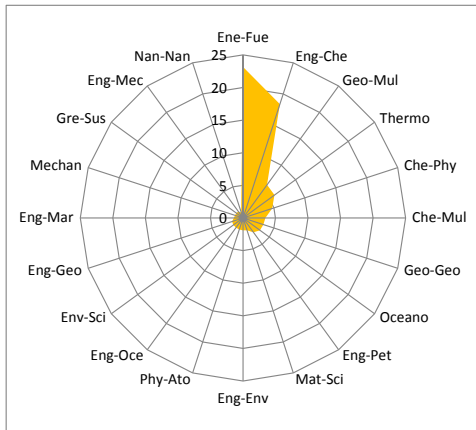
天然气水合物的研究是一门交叉科学，涉及到多个方面，本文依据论文刊发期刊所属的学科领域，对 9490 篇天然气水合物论文的学科领域分布进行分析。结果表明 9490 篇分布在 121 个学科领域中，其中论文数大于 10 篇的学科领域有 67 个，表 2 给出了论文数最多的前 20 个学科领域名称及其论文情况。

表 2 2014-2023 年国际天然气水合物论文学科领域分布情况

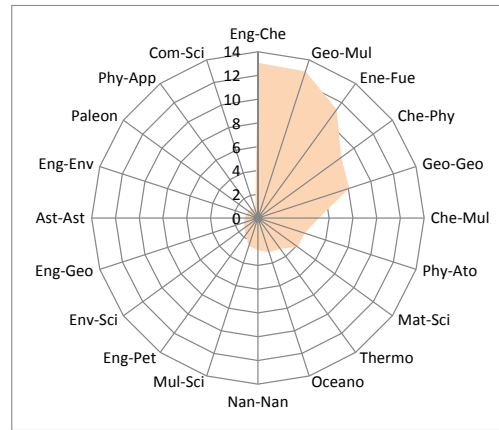
序号	领域名称	领域代码	论文数	占比
1	Engineering, Chemical	Eng-Che	3061	17.45%
2	Energy & Fuels	Ene-Fue	2987	17.03%
3	Chemistry, Physical	Che-Phy	1315	7.50%
4	Geosciences, Multidisciplinary	Geo-Mul	1249	7.12%
5	Thermodynamics	Thermo	1033	5.89%
6	Chemistry, Multidisciplinary	Che-Mul	853	4.86%
7	Geochemistry & Geophysics	Geo-Geo	642	3.66%
8	Physics, Atomic, Molecular & Chemical	Phy-Ato	514	2.93%
9	Materials Science, Multidisciplinary	Mat-Sci	506	2.88%
10	Oceanography	Oceano	464	2.64%
11	Engineering, Petroleum	Eng-Pet	457	2.60%
12	Engineering, Environmental	Eng-Env	328	1.87%
13	Environmental Sciences	Env-Sci	280	1.60%
14	Mechanics	Mechan	250	1.42%
15	Nanoscience & Nanotechnology	Nan-Nan	235	1.34%
16	Engineering, Mechanical	Eng-Mec	228	1.30%
17	Engineering, Geological	Eng-Geo	208	1.19%
18	Physics, Applied	Phy-App	204	1.16%
19	Engineering, Ocean	Eng-Oce	203	1.16%
20	Multidisciplinary Sciences	Mul-Sci	199	1.13%

表 2 中的结果表明，国际天然气水合物研究论文主要集中在工程化学（Engineering, Chemical）、能源与燃料（Energy & Fuels）、化学物理（Chemistry, Physical）、地球交叉科学（Geosciences, Multidisciplinary）、热力学（Thermodynamics）这五个学科领域中，每个学科领域的论文数都超过了 1000 篇，五个学科领域论文总数为 9645 篇，其中论文数最多的学科领域是工程化学。

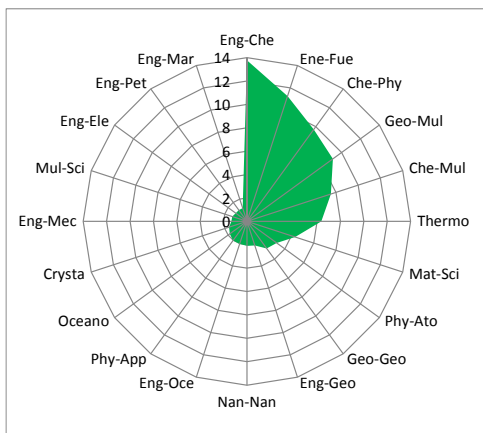
在分析论文学科领域分布的基础上，进一步研究发文数量前 6 个国家的学科领域特色。首先计算出中国、美国、日本、俄罗斯、印度、德国这 6 个国家论文在表 2 列出的前 20 个学科领域各自占比情况，然后运用可视化方法对比不同国家论文的学科领域分布特色，具体如图 4 所示。



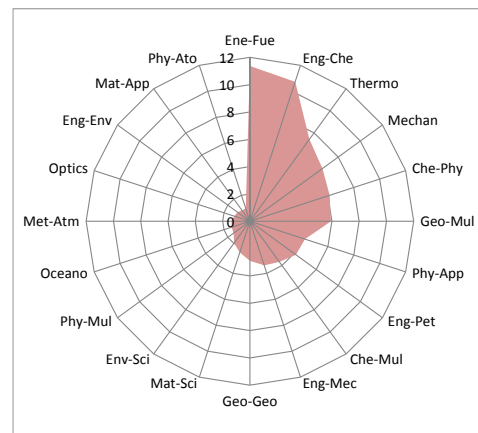
(a) 中国



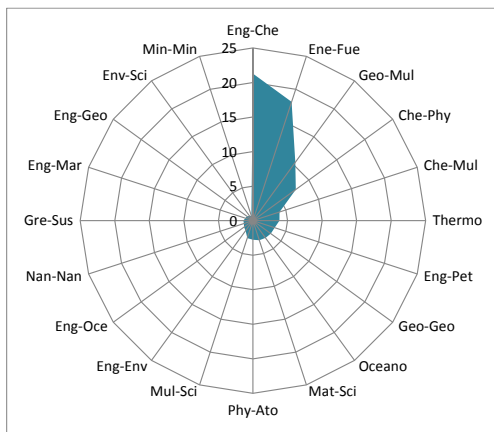
(b) 美国



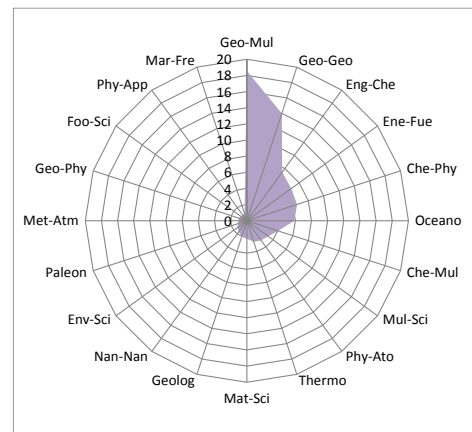
(c) 日本



(d) 俄罗斯



(e) 印度



(f) 德国

图 4 发文前 6 个国家的论文学科分布对比情况

图 4 中的结果表明，不同国家的学科分布特色较为明显，中国和俄罗斯的研究领域分布较为相似，研究论文主要集中在能源与燃料领域，美国、日本和印度的研究论文主要集中在工程与化学领域。德国的研究论文主要集中在地球科学与交叉科学两个领域都较为集中。

为了了解国际天然气水合物研究论文主要在哪些期刊上发表学术论文,我们对这 9490 篇论文的来源进行统计。表 3 给出了发表数量前 20 名的期刊信息及载文数量。这 20 种期刊发表的论文数占到了全部发表论文的 43.96%。其中载文数量最多的两种期刊是 Energy & Fuels (544 篇) 和 Journal of Natural Gas Science and Engineering (429 篇)。

表 3 2014-2023 年国际天然气水合物论文期刊分布情况

序号	期刊名称	论文数 14-18	论文数 19-23	论文数 总数	占比
1	Energy & Fuels	158	386	544	5.73
2	Journal of Natural Gas Science and Engineering	191	238	429	4.52
3	Marine and Petroleum Geology	167	198	365	3.85
4	Fuel	61	268	329	3.47
5	Energy	55	235	290	3.06
6	Energies	57	199	256	2.70
7	Fluid Phase Equilibria	138	55	193	2.03
8	Journal of Chemical and Engineering Data	111	77	188	1.98
9	Chemical Engineering Journal	22	165	187	1.97
10	Applied Energy	83	94	177	1.87
11	Chemical Engineering Science	75	85	160	1.69
12	Journal of Physical Chemistry c	78	77	155	1.63
13	Journal of Molecular Liquids	31	113	144	1.52
14	Journal of Petroleum Science and Engineering	42	101	143	1.51
15	Journal of Chemical Thermodynamics	78	39	117	1.23
16	Journal of Chemical Physics	64	52	116	1.22
17	Industrial & Engineering Chemistry Research	41	60	101	1.06
18	Journal of Geophysical Research-solid Earth	48	47	95	1.00
19	Physical Chemistry Chemical Physics	54	40	94	0.99
20	Energy Procedia	52	37	89	0.94
总计		1606	2566	4172	43.96

5 高产机构分析

通过对论文高产机构进行分析,可以有助于了解国际天然气水合物科研团队的研究实力和侧重点。表 4 列出国际天然气水合物发文机构前 20 位的发文数量

分布情况，并将第一作者和通讯作者的论文数归为主要作者论文数一并进行统计。

表 4 2014-2023 年国际天然气水合物论文构分布情况

序号	机构	国家/地区	论文数 14-18	论文数 19-23	论文总数	主要作者 论文数
1	中国科学院	中国	317	551	868	679
2	大连理工大学	中国	130	360	490	452
3	中国石油大学	中国	109	340	449	358
4	中国石油大学华东	中国	56	317	373	323
5	中国地质大学	中国	100	226	326	236
6	中国科学院大学	中国	118	199	317	63
7	俄罗斯科学院	俄罗斯	121	183	304	254
8	国家先进工业科学技术研究所	日本	134	121	255	146
9	广州海洋地质调查局	中国	83	139	222	87
10	科罗拉多矿业学院	美国	96	116	212	156
11	青岛海洋科学与技术国家实验室	中国	57	144	201	94
12	中国地质调查局	中国	40	134	174	86
13	新加坡国立大学	新加坡	78	95	173	143
14	广东省新能源与可再生能源研究 重点实验室	中国	36	134	170	78
15	西南石油大学	中国	34	130	164	136
16	自然资源部	中国	0	150	150	89
17	青岛海洋地质研究所	中国	43	99	142	81
18	吉林大学	中国	36	103	139	127
19	新西伯利亚国立大学	俄罗斯	50	73	123	68
20	庆应义塾大学	日本	73	47	120	91

从表 4 可以看出，中国科学院的发文数量最多为 868 篇，发文数量前 20 个机构中，中国机构有 14 个。

6 被引情况分析

在 9490 篇国际天然气水合物论文中，被引次数为 0 的论文共有 994 篇(2024 年 5 月 1 日检索数据)，占到论文总数的 10.47%；被引次数小于等于 3 的论文共有 2737 篇，占到总数的 28.84%。总体情况表明国际天然气水合物论文的影响力

有待于进一步提高。9490 篇论文的具体被引用情况如表 5 所示。

表 5 2014-2023 年国际天然气水合物论文被引情况

被引频次	论文数	占比	累积论文数	累积占比
0	994	10.47	994	10.47
1	687	7.24	1681	17.71
2	591	6.23	2272	23.94
3	465	4.90	2737	28.84
4	438	4.62	3175	33.46
5	398	4.19	3573	37.65
6	375	3.95	3948	41.60
7	325	3.42	4273	45.03
8	293	3.09	4566	48.11
9	297	3.13	4863	51.24
10	258	2.72	5121	53.96
>10	4369	46.03793	9490	100.00

表 5 中的结果还显示，被引次数大于 10 次的论文共有 4369 篇，占论文总数的 46.03793%，表明该领域里有一定影响力的论文数量和占比较高。在 9490 篇国际天然气水合物论文中被引次数最多的是由新加坡国立大学 Chong Z 为第一作者完成发表在 *Applied Energy* 上的综述论文，共被引用 1270 次^[11]。被引次数排名第 2 的是由苏黎世联邦理工学院 Sosso G 完成发表在 *Chemical Reviews* 综述论文，共被引用 620 次^[12]。表 6 显示 2014-2023 年国际天然气水合物论文中被引次数排序前 20 的论文情况。

表 6 2014-2023 年国际天然气水合物论文被引次数排序前 20 论文信息

序号	作者	年份	期刊	类型	被引次数
1	Chong Z; Yang S; Babu P; 等	2016	Applied Energy	Review	1270
2	Sosso G; Chen J; Cox S; 等	2016	Chemical Reviews	Review	620
3	Li X; Xu Ch; Zhang Y; 等	2016	Applied Energy	Review	489
4	Ruppel C; Kessler J	2017	Reviews of Geophysics	Review	484
5	Babu P; Linga P; Kumar R; 等	2015	Energy	Review	440
6	Konno Y; Fujii T; Sato, A; Akamine K; 等	2017	Energy & Fuels	Article	431
7	Hassanpouryouzband A; Joonaki E; Farahani M; 等	2020	Chemical Society Reviews	Review	408
8	Veluswamy H; Kumar A; Seo Y; 等	2018	Applied Energy	Review	388
9	Milkov A; Etiope G	2018	Organic Geochemistry	Article	324
10	Veluswamy H; Kumar R; Linga P	2014	Applied Energy	Article	316
11	Kumar A; Bhattacharjee G; Kulkarni B; 等	2015	Industrial & Engineering Chemistry Research	Review	308
12	Dean J; Middelburg J; Rockmann, T; 等	2018	Reviews of Geophysics	Review	305
13	Miller K; Thompson K; Johnston P; 等	2018	Frontiers in Marine Science	Review	300
14	Song Y; Cheng Ch; Zhao, J; 等	2015	Applied Energy	Review	299
15	Zhang K; Blake G; Bergin E	2015	Astrophysical Journal Letters	Article	296
16	Roberts A	2015	Earth-Science Reviews	Review	288
17	Zhao J; Zhu Z; Song Y; 等	2015	Applied Energy	Article	284
18	Kang K; Linga P; Park K; 等	2014	Desalination	Article	280
19	Fujii T; Suzuki K; Takayama T; 等	2015	Marine and Petroleum Geology	Article	276
20	Babu P; Nambiar A; He T; 等	2018	ACS Sustainable Chemistry & Engineering	Review	253

7 研究主题分析

通过对论文中列出的关键词进行分析，可以有助于梳理国际天然气水合物的研究主题和热点。表 7 列出了国际天然气水合物论文中最频繁使用的前 20 个关键词。根据关键词列表，国际天然气水合物领域研究最为广泛的主题包括：减压（Depressurization）、动力学（Kinetic）、南海（South China Sea）、二氧化碳（Carbon Dioxide）和数值模拟（Numerical Simulation）等。

表 7 2014-2023 年国际天然气水合物论文研究主题分布情况

序号	关键词名称	频次 14-18	频次 19-23	总计
1	Depressurization: 减压	87	182	269
2	Kinetic: 动力学	86	112	198
3	South China Sea: 南海	68	109	177
4	Carbon Dioxide: 二氧化碳	85	87	172
5	Numerical Simulation: 数值模拟	45	116	161
6	Induction Time: 诱导时间	48	82	130
7	Flow Assurance: 流动保证	52	73	125
8	Dissociation: 解离	50	73	123
9	Hydrate Formation: 水合物形成	33	88	121
10	Hydrate Dissociation: 水合物解离	44	72	116

分析研究热点在时间上的变化趋势，在划分的两个时期（2014-2018、2019-2023），排序前 10 关键词的词频都是正向增长。发展速度最快的关键词有减压（Depressurization）、数值模拟（Numerical Simulation）。

8 结语

本文在 WOS 数据库中检索得到 2014-2023 年国际天然气水合物研究论文，分别对文献数量、来源和研究主题等研究态势进行了多角度的文献计量分析。研究发现，国际天然气水合物研究论文增长速度很快，呈现出快速发展的态势，中国、美国和日本是论文总数排序前三的国家，从单年论文数来看，中国已经成为年发表论文数最多的国家。分析论文的学科领域分布情况表明，论文数最多的

学科领域是化学工程。论文进一步分析了国际天然气水合物论文的期刊分布情况,高产机构情况、被引频次情况和研究主题分布情况内容,研究结果为系统掌握国际天然气水合物研究态势提供有效支撑。

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附件：2014–2023 年国际天然气水合物被引频次前 500 篇的 SCI 研究论文

序号	标题	作者	期刊名	年	卷	期	开始页码	结束页码	关键词	被引频次
1	Review of Natural Gas Hydrates as An Energy Resource: Prospects and Challenges	Chong, ZR; Yang, SHB; Babu, P; Linga, P; Li, XS	Applied Energy	2016	162		1633	1652	Gas Hydrates; Natural Gas; Energy Recovery; Energy Resource; Methane Hydrates; Unconventional Gas	1270
2	Crystal Nucleation in Liquids: Open Questions and Future Challenges in Molecular Dynamics Simulations	Sosso, GC; Chen, J; Cox, SJ; Fitzner, M; Pedevilla, P; Zen, A; Michaelides, A	Chemical Reviews	2016	116	12	7078	7116	Numerical-simulation; Gas-production; Depressurization; Recovery; Behavior; Sediments	620
3	Investigation into Gas Production from Natural Gas Hydrate: A Review	Li, XS; Xu, CG; Zhang, Y; Ruan, XK; Li, G; Wang, Y	Applied Energy	2016	172		286	322	Natural Gas Hydrate; Production Technique; Experiment; Numerical Simulation; Field Tests	489
4	The Interaction of Climate Change and Methane Hydrates	Ruppel, CD; Kessler, JD	Reviews of Geophysics	2017	55	1	126	168	Natural-gas Hydrate; South China Sea; Methane Hydrate; Shenhu Area; Production Behavior; Deposits; Energy; Jet	484
5	A Review of the Hydrate Based Gas Separation (hbgs) Process for Carbon Dioxide Pre-combustion Capture	Babu, P; Linga, P; Kumar, R; Englezos, P	Energy	2015	85		261	279	Gas Hydrates; Pre-combustion Capture; Carbon Dioxide Capture; Clathrate Process; Gas Separation; Igcc Plants	440
6	Key Findings of the World's First Offshore Methane Hydrate Production Test off the Coast of Japan: Toward Future Commercial Production	Konno, Y; Fujii, T; Sato, A; Akamine, K; Naiki, M; Masuda, Y; Yamamoto, K; Nagao, J	Energy & Fuels	2017	31	3	2607	2616	Methane Hydrate	431
7	Gas Hydrates in Sustainable Chemistry	Hassanpouryouzband, A; Joonaki, E; Farahani, MV; Takeya, S; Ruppel, C; Yang, JH; English, NJ; Schicks, JM; Edlmann, K; Mehrabian, H; Aman, ZM; Tohidi, B	Chemical Society Reviews	2020	49	15	5225	5309	Anti-agglomeration; Inhibition Performance; Ionic Liquids; Derivatives; Adsorption; Surfactant; Steel	408
8	A Review of Solidified Natural Gas (sng) Technology for Gas Storage Via Clathrate Hydrates	Veluswamy, HP; Kumar, A; Seo, Y; Lee, JD; Linga, P	Applied Energy	2018	216		262	285	Gas Hydrates; Sng Technology; Natural Gas; Energy Storage; Storage Capacity; Methane Storage	388
9	Revised Genetic Diagrams for Natural Gases Based on A Global Dataset of >20,000 Samples	Milkov, AV; Etiope, G	Organic Geochemistry	2018	125		109	120	Natural Gas; Methane; Stable Isotope; Microbial Gas; Thermogenic Gas; Abiotic Gas	324
10	Hydrogen Storage in Clathrate Hydrates: Current State of the Art and Future Directions	Veluswamy, HP; Kumar, R; Linga, P	Applied Energy	2014	122		112	132	Gas Hydrates; Hydrogen Storage; Clathrates; Hydrogen Hydrates; Promoters; Storage Capacity	316
11	Role of Surfactants in Promoting Gas Hydrate Formation	Kumar, A; Bhattacharjee, G; Kulkarni, BD; Kumar, R	Industrial & Engineering Chemistry Research	2015	54	49	1221 7	1223 2	Geological Structure; Continental-margin; Methane; Sea; Water; Tectonics; Okhotsk; Sediments; Shallow; Strait	308

序号	标题	作者	期刊名	年	卷	期	开始页码	结束页码	关键词	被引频次
12	Methane Feedbacks to the Global Climate System in A Warmer World	Dean, JF; Middelburg, JJ; Röckmann, T; Aerts, R; Blauw, LG; Egger, M; Jetten, MSM; de Jong, AEE; Meisel, OH; Rasigraf, O; Slomp, CP; in't Zandt, MH; Dolman, AJ	Reviews of Geophysics	2018	56	1	207	250	Methane (ch4); Climate Change; Wetlands; Marine and Freshwaters; Permafrost; Methane Hydrates	305
13	An Overview of Seabed Mining Including the Current State of Development, Environmental Impacts, and Knowledge Gaps	Miller, KA; Thompson, KF; Johnston, P; Santillo, D	Frontiers in Marine Science	2018	4				Deep Sea Mining; Biodiversity Loss; Seabed Disturbance; Regulations; Manganese Nodule; Seamount; Hydrothermal Vent; International Seabed Authority	300
14	Evaluation of Gas Production from Methane Hydrates Using Depressurization, Thermal Stimulation and Combined Methods	Song, YC; Cheng, CX; Zhao, JF; Zhu, ZH; Liu, WG; Yang, MJ; Xue, KH	Applied Energy	2015	145		265	277	Methane Hydrate-bearing Sediments; Energy Efficiency; Depressurization; Thermal Injection; Combination Production; Buffer Effect	299
15	Evidence of Fast Pebble Growth near Condensation Fronts in the HI Tau Protoplanetary Disk	Zhang, K; Blake, GA; Bergin, EA	Astrophysical Journal Letters	2015	806	1			Astrochemistry; Planets and Satellites: Composition; Protoplanetary Disks; Stars: Individual (hl Tau); Stars: Pre-main Sequence	296
16	Magnetic Mineral Diagenesis	Roberts, AP	Earth-science Reviews	2015	151		1	47	Diagenesis; Magnetic Minerals; Organic Carbon; Oxidation; Nitrate Reduction; Iron Reduction; Sulphate Reduction; Methanogenesis; Anaerobic Oxidation of Methane; Remagnetisation	288
17	Analyzing the Process of Gas Production for Natural Gas Hydrate Using Depressurization	Zhao, JF; Zhu, ZH; Song, YC; Liu, WG; Zhang, Y; Wang, DY	Applied Energy	2015	142		125	134	Hydrate; Depressurization; Sensible Heat; Thermal Conductivity; Dissociation	284
18	Seawater Desalination by Gas Hydrate Process and Removal Characteristics of Dissolved Ions (Na ⁺ , K ⁺ , Mg ²⁺ , Ca ²⁺ , B ³⁺ , Cl ⁻ , SO ₄ ²⁻)	Kang, KC; Linga, P; Park, KN; Choi, SJ; Lee, JD	Desalination	2014	353		84	90	Desalination; Clathrate Process; Gas Hydrates; Seawater; Ion Rejection	280
19	Geological Setting and Characterization of A Methane Hydrate Reservoir Distributed at the First Offshore Production Test Site on the Daini-atsumi Knoll in the Eastern Nankai Trough, Japan	Fujii, T; Suzuki, K; Takayama, T; Tamaki, M; Komatsu, Y; Konno, Y; Yoneda, J; Yamamoto, K; Nagao, J	Marine and Petroleum Geology	2015	66		310	322	Methane Hydrate; Nankai Trough; Site Selection; Geophysical Logging; Pressure Coring; Reservoir Properties; Hydrate Saturation	276
20	A Review of Clathrate Hydrate Based Desalination to Strengthen Energy-water Nexus	Babu, P; Nambiar, A; He, TB; Karimi, IA; Lee, JD; Englezos, P; Linga, P	Acs Sustainable Chemistry & Engineering	2018	6	7	8093	8107	Gas Hydrates; Desalination; Clathrate Process; Seawater; Cold Energy; Lng	253
21	Rapid Methane Hydrate Formation to Develop A Cost Effective Large Scale Energy Storage System	Veluswamy, HP; Wong, AJH; Babu, P; Kumar, R; Kulprathipanja, S; Rangsunvigit, P; Linga, P	Chemical Engineering Journal	2016	290		161	173	Gas Hydrates; Energy Storage; Tetrahydrofuran; Enhanced Kinetics; Natural Gas Storage; Unstirred Tank Reactor	244
22	Marine Cold Seeps and Their Manifestations: Geological Control, Biogeochemical Criteria	Suess, E	International Journal of Earth	2014	103	7	1889	1916	Seep Carbonates; Fore-arc Fluids; Global Seeps; Biota-carbonate Association; Active Margin	243

序号	标题	作者	期刊名	年	卷	期	开始页码	结束页码	关键词	被引频次
	and Environmental Conditions		Sciences						Fluids; Passive Margin Seeps	
23	Kinetic Study of Carbon Dioxide Hydrate Formation in Presence of Silver Nanoparticles and Sds	Mohammadi, A; Manteghian, M; Haghtalab, A; Mohammadi, AH; Rahmati-Abkenar, M	Chemical Engineering Journal	2014	237		387	395	Clathrate Hydrate; Gas Hydrate; Kinetic; Sds; Silver Nanoparticles; Storage Capacity	242
24	Microstructural Evolution of Gas Hydrates in Sedimentary Matrices Observed with Synchrotron X-ray Computed Tomographic Microscopy	Chaouachi, M; Falenty, A; Sell, K; Enzmann, F; Kersten, M; Haberthür, D; Kuhs, WF	Geochemistry Geophysics Geosystems	2015	16	6	1711	1722	Gas-hydrates; Growth; Microstructure; Memory Effect; Microtomography; Poroelastic Properties	240
25	Formation and Properties of Ice Xvi Obtained by Emptying A Type Sii Clathrate Hydrate	Falenty, A; Hansen, TC; Kuhs, WF	Nature	2014	516	75 30	231	+	Molecular-hydrogen; Clathrate Hydrate; Water Cavities; Recovery; Clusters	236
26	the Second Offshore Production of Methane Hydrate in the Nankai Trough and Gas Production Behavior from A Heterogeneous Methane Hydrate Reservoir	Yamamoto, K; Wang, XX; Tamaki, M; Suzuki, K	Rsc Advances	2019	9	45	2598 7	2601 3	Heat-transfer Characteristics; Eastern Nankai Trough; Methane-hydrate; Gas Hydrate; Natural-gas; Bearing Sediments; Shenhu Area; Dissociation; Constant; Behavior	228
27	Very Large Release of Mostly Volcanic Carbon during the Palaeocene-eocene Thermal Maximum	Gutjahr, M; Ridgwell, A; Sexton, PF; Anagnostou, E; Pearson, PN; Pälike, H; Norris, RD; Thomas, E; Foster, GL	Nature	2017	548	76 69	573	+	Kumano Basin; Natural-gas; Solubility; Evolution; Origin; Japan; Constraints; Vitritinite; Isotopes; Detector	225
28	Widespread Methane Leakage from the Sea Floor on the Northern Us Atlantic Margin	Skarke, A; Ruppel, C; Kodis, M; Brothers, D; Lobecker, E	Nature Geoscience	2014	7	9	657	661	Nan	222
29	the Status of Natural Gas Hydrate Research in China: A Review	Song, YC; Yang, L; Zhao, JF; Liu, WG; Yang, MJ; Li, YH; Liu, Y; Li, QP	Renewable & Sustainable Energy Reviews	2014	31		778	791	Natural Gas Hydrate; Exploration; Gas Hydrate Mining Technology; Mechanical Property; Environmental Impact; China	218
30	Methane Hydrates in Nature-current Knowledge and Challenges	Collett, T; Bahk, JJ; Baker, R; Boswell, R; Divins, D; Frye, M; Goldberg, D; Husebo, J; Koh, C; Malone, M; Morell, M; Myers, G; Shipp, C; Torres, M	Journal of Chemical and Engineering Data	2015	60	2	319	329	Dissociation Pressures; Membrane Column; Purification; Simulation	216
31	Lng Cold Energy Utilization: Prospects and Challenges	He, TB; Chong, ZR; Zheng, JJ; Ju, YL; Linga, P	Energy	2019	170		557	568	Lng; Cold Energy Utilization; Power Generation; Desalination; Direct Cooling; Air Conditioning	212
32	the Inik Sikumi Field Experiment, Alaska North Slope: Design, Operations, and Implications for Co ₂ -ch ₄ Exchange in Gas Hydrate Reservoirs	Boswell, R; Schoderbek, D; Collett, TS; Ohtsuki, S; White, M; Anderson, BJ	Energy & Fuels	2017	31	1	140	153	Gas Hydrate; Co ₂ Capture; Clathrate Hydrate; Flue-gas; Storage; Water; Behavior; Promoter	212
33	Review of Gas Hydrate Dissociation Kinetic Models for Energy Recovery	Yin, ZY; Chong, ZR; Tan, HK; Linga, P	Journal of Natural Gas Science and Engineering	2016	35		1362	1387	Gas Hydrates; Hydrate Dissociation; Kinetic Models; Cfd Modelling; Reservoir Simulators; Energy Recovery; Intrinsic Kinetics	209

序号	标题	作者	期刊名	年	卷	期	开始页码	结束页码	关键词	被引频次
34	A Review of Clathrate Hydrate Nucleation	Khurana, M; Yin, ZY; Linga, P	Acs Sustainable Chemistry & Engineering	2017	5	12	11176	11203	Gas Hydrates; Nucleation; Clathrate Hydrates; Stochastic Nature; Molecular Simulation; Porous Media	207
35	Review of Pre-combustion Capture and Ionic Liquid in Carbon Capture and Storage	Theo, WL; Lim, JS; Hashim, H; Mustaffa, AA; Ho, WS	Applied Energy	2016	183		1633	1663	Carbon Capture and Storage (ccs); Pre-combustion Capture; Ionic Liquid (il); Unifac Model; Computer-aided Molecular Design (camd); Review	205
36	Temporal Constraints on Hydrate-controlled Methane Seepage off Svalbard	Berndt, C; Feseker, T; Treude, T; Krastel, S; Liebetrau, V; Niemann, H; Bertics, VJ; Dumke, I; Dünnbier, K; Ferré, B; Graves, C; Gross, F; Hissmann, K; Hühnerbach, V; Krause, S; Lieser, K; Schauer, J; Steinle, L	Science	2014	343	6168	284	287	Centrifugal Pump; Flow; Performance; Equations; Schemes	205
37	Recent Advances in Gas Hydrate-based Co ₂ Capture	Dashti, H; Yew, LZ; Lou, X	Journal of Natural Gas Science and Engineering	2015	23		195	207	Co ₂ Capture; Hydrate-based Co ₂ Capture; Semi-clathrate Hydrates; Chemical Additives; Mechanical Methods	202
38	Enhanced CH ₄ recovery and CO ₂ storage via thermal stimulation in the CH ₄ /CO ₂ replacement of methane hydrate	Zhang, LX; Yang, L; Wang, JQ; Zhao, JF; Dong, HS; Yang, MJ; Liu, Y; Song, YC	Chemical Engineering Journal	2017	308		40	49	Ch ₄ /co ₂ Replacement; Thermal Stimulation; Ch ₄ Replacement Percentage; Co ₂ Storage Efficiency; Energy Efficiency	197
39	A Review of Gas Hydrate Growth Kinetic Models	Yin, ZY; Khurana, M; Tan, HK; Linga, P	Chemical Engineering Journal	2018	342		9	29	Gas Hydrates; Hydrate Growth; Kinetic Models; Heat Transfer; Mass Transfer; Fluids Flow; Porous Medium; Numerical Modelling; Semi-empirical Models	196
40	Synchrotron X-ray Computed Microtomography Study on Gas Hydrate Decomposition in A Sedimentary Matrix	Yang, L; Falenty, A; Chaouachi, M; Haberthür, D; Kuhs, WF	Geochemistry Geophysics Geosystems	2016	17	9	3717	3732	Gas Hydrates; Decomposition Characteristics; Submicron Visualization; Sedimentary Matrices; Synchrotron X-ray Computed Microtomography	194
41	Energy-efficient Natural Gas Hydrate Production Using Gas Exchange	Koh, DY; Kang, H; Lee, JW; Park, Y; Kim, SJ; Lee, J; Lee, JY; Lee, H	Applied Energy	2016	162		114	130	Natural Gas Hydrate; Gas Exchange; Co ₂ -ch ₄ Replacement; Thermodynamics	192
42	Water Permeability in Hydrate-bearing Sediments: A Pore-scale Study	Dai, S; Seol, Y	Geophysical Research Letters	2014	41	12	4176	4184	Natural-gas Hydrate; Pectin; Wellbore; Liquid	190
43	A Review of Prokaryotic Populations and Processes in Sub-seafloor Sediments, Including Biosphere:geosphere Interactions	Parkes, RJ; Cragg, B; Roussel, E; Webster, G; Weightman, A; Sass, H	Marine Geology	2014	352		409	425	Sub-seafloor Biosphere; Marine Microbiology; Prokaryotic Diversity; Dark Energy; Biosphere:geosphere Interactions	189
44	Mechanical Properties of Hydrate-bearing Turbidite Reservoir in the First Gas Production Test Site of the Eastern Nankai Trough	Yoneda, J; Masui, A; Konno, Y; Jin, Y; Egawa, K; Kida, M; Ito, T; Nagao, J; Tenma, N	Marine and Petroleum Geology	2015	66		471	486	Hydrate-bearing Sand; Triaxial Test; Pressure Core; Mechanical Property; Hydrate Saturation	185

序号	标题	作者	期刊名	年	卷	期	开始页码	结束页码	关键词	被引频次
45	Depressurization Induced Gas Production from Hydrate Deposits with Low Gas Saturation in A Pilot-scale Hydrate Simulator	Li, B; Li, XS; Li, G; Feng, JC; Wang, Y	Applied Energy	2014	129		274	286	Gas Hydrate; Depressurization; Porous Media; Numerical Simulation; Intrinsic Rate	185
46	Interfacial Phenomena in Gas Hydrate Systems	Aman, ZM; Koh, CA	Chemical Society Reviews	2016	45	6	1678	1690	Carbon-dioxide Capture; Flue-gas; Separation; Graphite; Tetrahydrofuran; Kinetics; Impact; Tbab; Thf; Go	183
47	Hydro-bio-geomechanical Properties of Hydrate-bearing Sediments from Nankai Trough	Santamarina, JC; Dai, S; Terzariol, M; Jang, J; Waite, WF; Winters, WJ; Nagao, J; Yoneda, J; Konno, Y; Fujii, T; Suzuki, K	Marine and Petroleum Geology	2015	66		434	450	Methane Hydrate; Hydrate-bearing Sediment; Nankai Trough; Physical Properties; Pressure Core	183
48	Overview and Introduction: Pressure Core-sampling and Analyses in the 2012-2013 Mh21 Offshore Test of Gas Production from Methane Hydrates in the Eastern Nankai Trough	Yamamoto, K	Marine and Petroleum Geology	2015	66		296	309	Gas Hydrate; Core Sampling; Pressure Core; Hydraulic Properties; Mechanical Properties	182
49	Effects of Dissociation on the Shear Strength and Deformation Behavior of Methane Hydrate-bearing Sediments	Hyodo, M; Li, YH; Yoneda, J; Nakata, Y; Yoshimoto, N; Nishimura, A	Marine and Petroleum Geology	2014	51		52	62	Methane Hydrate; Shear Strength; Deformation Behavior; Dissociation	182
50	Cold Seep Systems in the South China Sea: An Overview	Feng, D; Qiu, JW; Hu, Y; Peckmann, J; Guan, HX; Tong, HP; Chen, C; Chen, JX; Gong, SG; Li, N; Chen, DF	Journal of Asian Earth Sciences	2018	168		3	16	Hydrocarbon Seep; Methane; Chemosynthesis; Hydrate; Carbonate; Mud Volcano; Pockmark; South China Sea	179
51	Review of Fundamental Properties of Co2 Hydrates and Co2 Capture and Separation Using Hydration Method	Ma, ZW; Zhang, P; Bao, HS; Deng, S	Renewable & Sustainable Energy Reviews	2016	53		1273	1302	Co2 Hydrate; Capture and Separation; Promoters; Gas Mixture	177
52	Methane Hydrate Formation in Confined Nanospace Can Surpass Nature	Casco, ME; Silvestre-Albero, J; Ramírez-Cuesta, AJ; Rey, F; Jordá, JL; Bansode, A; Urakawa, A; Peral, I; Martínez-Escandell, M; Kaneko, K; Rodríguez-Reinoso, F	Nature Communications	2015	6				Focused Fluid-flow; Shallow Gas; Hikurangi Margin; Accretionary Wedge; Plate Convergence; Acoustic Evidence; Seismic Evidence; Mud Volcanos; Cold Seeps; Hydrate	176
53	Authigenic Carbonates from Newly Discovered Active Cold Seeps on the Northwestern Slope of the South China Sea: Constraints on Fluid Sources, Formation Environments, and Seepage Dynamics	Liang, QY; Hu, Y; Feng, D; Peckmann, J; Chen, LY; Yang, SX; Liang, JQ; Tao, J; Chen, DF	Deep-sea Research Part I-oceanographic Research Papers	2017	124		31	41	Cold Seep; Authigenic Carbonate; Fluid Source; Formation Environment; Seepage Dynamic; C-14 Age; South China Sea	169
54	Synchrosqueezing S-transform and Its Application in Seismic Spectral Decomposition	Huang, ZL; Zhang, JH; Zhao, TH; Sun, YB	Ieee Transactions on Geoscience and Remote Sensing	2016	54	2	817	825	Frequency Spectral Anomaly; Gas Hydrate; Seismic Data; Spectral Decomposition; Synchrosqueezing S-transform (ssst); Time-frequency (t-f) Representation	169

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55	An Innovative Approach to Enhance Methane Hydrate Formation Kinetics with Leucine for Energy Storage Application	Veluswamy, HP; Kumar, A; Kumar, R; Linga, P	Applied Energy	2017	188		190	199	Gas Hydrates; Sng Technology; Energy Storage; Enhanced Kinetics; Hydrate Nucleation	168
56	Methane Hydrates: A Future Clean Energy Resource	Yin, ZY; Linga, P	Chinese Journal of Chemical Engineering	2019	27	9	2026	2036	Methane Hydrates; Energy Recovery; Gas Production; Energy Resource; Recent Advance; Future Outlook	167
57	Pore Habit of Methane Hydrate and Its Evolution in Sediment Matrix - Laboratory Visualization with Phase-contrast Micro-ct	Lei, L; Seol, Y; Choi, JH; Kneafsey, TJ	Marine and Petroleum Geology	2019	104		451	467	Methane Hydrate; Pore Habit; Phase-contrast Micro Ct; Contact Angle	163
58	Massive Blow-out Craters Formed by Hydrate-controlled Methane Expulsion from the Arctic Seafloor	Andreassen, K; Hubbard, A; Winsborrow, M; Patton, H; Vadakkepuliambatta, S; Plaza-Faverola, A; Gudlaugsson, E; Serov, P; Deryabin, A; Mattingsdal, R; Mienert, J; Büinz, S	Science	2017	356	63 41	948	952	Plasticity-model; Gas Hydrate; Dilatancy; Behavior; Dissociation; Sediments; Storage	162
59	Enhanced Clathrate Hydrate Formation Kinetics at near Ambient Temperatures and Moderate Pressures: Application to Natural Gas Storage	Veluswamy, HP; Kumar, S; Kumar, R; Rangsunvigit, P; Linga, P	Fuel	2016	182		907	919	Natural Gas Storage; Methane Hydrates; Unstirred Reactor; Rapid Kinetics; Surfactant; Tetrahydrofuran	162
60	Identification of Clathrate Hydrates, Hexagonal Ice, Cubic Ice, and Liquid Water in Simulations: the Chill Plus Algorithm	Nguyen, AH; Molinero, V	Journal of Physical Chemistry B	2015	119	29	9369	9376	Organofluorine Chemistry; Trans-perfluorodecalin; Oxygen; Liquid; Perfluorocarbons; Crystal; Hydrate	162
61	Production Behavior and Numerical Analysis for 2017 Methane Hydrate Extraction Test of Shenhu, South China Sea	Chen, L; Feng, YC; Okajima, J; Komiya, A; Maruyama, S	Journal of Natural Gas Science and Engineering	2018	53		55	66	Methane Hydrate; Energy Resource; Shenhu Area; South China Sea; Production Behavior	161
62	Carbon Dioxide Sequestration Via Gas Hydrates: A Potential Pathway Toward Decarbonization	Zheng, JJ; Chong, ZR; Qureshi, MF; Linga, P	Energy & Fuels	2020	34	9	1052 9	1054 6	Natural-gas Hydrate; Thermal-stimulation; Shenhu Area; Depressurization; Reservoir; Recovery; Energy; Water; Well; Dissociation	160
63	Perspectives on Molecular Simulation of Clathrate Hydrates: Progress, Prospects and Challenges	English, NJ; MacElroy, JMD	Chemical Engineering Science	2015	121		133	156	Clathrate Hydrates; Atomistic Simulation; Nucleation; Thermodynamics; Transport Properties	160
64	Permeability of Sediment Cores from Methane Hydrate Deposit in the Eastern Nankai Trough	Konno, Y; Yoneda, J; Egawa, K; Ito, T; Jin, Y; Kida, M; Suzuki, K; Fujii, T; Nagao, J	Marine and Petroleum Geology	2015	66		487	495	Gas Hydrate; Effective Permeability; Absolute Permeability; Flooding Test; Pressure Coring; Turbidite	160
65	Analysis of the Effect of Particle Size on Permeability in Hydrate-bearing Porous Media Using Pore Network Models	Wang, JQ; Zhao, JF; Zhang, Y; Wang, DY; Li, YH; Song, YC	Fuel	2016	163		34	40	Natural Gas Hydrate; Particle Size; Porosity; Permeability; Pore Network Model; X-ray Computed Tomography	157

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	Combined with Ct									
66	Methane Hydrate Formation in Excess Water Simulating Marine Locations and the Impact of Thermal Stimulation on Energy Recovery	Chong, ZR; Pujar, GA; Yang, MJ; Linga, P	Applied Energy	2016	177		409	421	Energy Recovery; Methane Hydrates; Unconventional Gas; Thermal Stimulation; Energy Efficiency Ratio; Gas Production	154
67	Authigenic Carbonates from An Active Cold Seep of the Northern South China Sea: New Insights into Fluid Sources and Past Seepage Activity	Feng, D; Chen, DF	Deep-sea Research Part Ii-topical Studies in Oceanography	2015	122		74	83	Authigenic Carbonate; Cold Seep; Fluid Source; C-14 Age; Carbon and Oxygen Isotope; South China Sea	153
68	Application of Various Water Soluble Polymers in Gas Hydrate Inhibition	Kamal, MS; Hussein, IA; Sultan, AS; von Solms, N	Renewable & Sustainable Energy Reviews	2016	60		206	225	Water Soluble Polymers; Poly(vinyl Caprolactam); Gas Hydrates; Kinetic Inhibitors; Induction Time	151
69	from Ice-binding Proteins to Bio-inspired Antifreeze Materials	Voets, IK	Soft Matter	2017	13	28	4808	4823	Bearing Sediments; Reservoir; Recovery; Model	150
70	Geological Features, Controlling Factors and Potential Prospects of the Gas Hydrate Occurrence in the East Part of the Pearl River Mouth Basin, South China Sea	Zhang, GX; Liang, JQ; Lu, JA; Yang, SX; Zhang, M; Holland, M; Schultheiss, P; Su, X; Sha, ZB; Xu, HN; Gong, YH; Fu, SY; Wang, LF; Kuang, ZG	Marine and Petroleum Geology	2015	67		356	367	Massive Gas Hydrate; Carbonate; Fine-grained; South China Sea	149
71	Two Massive, Rapid Releases of Carbon during Le Onset of the Palaeocene-eocene Thermal Maximum	Bowen, GJ; Maibauer, BJ; Kraus, MJ; Röhl, U; Westerhold, T; Steimke, A; Gingerich, PD; Wing, SL; Clyde, WC	Nature Geoscience	2015	8	1	44	47	Krishna-godavari Basin; Canyon Block 955; Pressure Core Analysis; Production Test-site; Bearing Sediment; Nankai Trough; Texas-gulf; Expedition; Water; Offshore	147
72	Experimental Evaluation of the Gas Recovery Factor of Methane Hydrate in Sandy Sediment	Konno, Y; Jin, Y; Shinjou, K; Nagao, J	Rsc Advances	2014	4	93	5166 6	5167 5	Different Surfactants; Behavior; Sds; Cuo	147
73	Effect of Nanoparticles on the Modifications of Drilling Fluids Properties: A Review of Recent Advances	Rafati, R; Smith, SR; Haddad, AS; Novara, R; Hamidi, H	Journal of Petroleum Science and Engineering	2018	161		61	76	Drilling Fluids; Nanoparticles; Rheological Properties; Filtration; Friction Reduction	146
74	Thermal Responses of A Gas Hydrate-bearing Sediment to A Depressurization Operation	Yamamoto, K; Kanno, T; Wang, XX; Tamaki, M; Fujii, T; Chee, SS; Wang, XW; Pimenov, V; Shako, V	Rsc Advances	2017	7	10	5554	5577	Porous Sediment; Plane-waves; Transmission Coefficients; Elastic-waves; Reflection; Interface; Water; Propagation; Simulation; Media	146
75	Research Progress of Hydrate-based Co2 Separation and Capture from Gas Mixtures	Xu, CG; Li, XS	Rsc Advances	2014	4	35	1830 1	1831 6	Morphology; System	144
76	Geological Controls on the Occurrence of Gas Hydrate from Core, Downhole Log, and Seismic Data in the Shenhu Area, South China Sea	Wang, XJ; Collett, TS; Lee, MW; Yang, SX; Guo, YQ; Wu, SG	Marine Geology	2014	357		272	292	Gas Hydrate; Coarse-grained; Thermogenic; Geologic Controls; South China Sea	142

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77	Review of Unconventional Hydrocarbon Resources in Major Energy Consuming Countries and Efforts in Realizing Natural Gas Hydrates as A Future Source of Energy	Vedachalam, N; Srinivasalu, S; Rajendran, G; Ramadass, GA; Atmanand, MA	Journal of Natural Gas Science and Engineering	2015	26		163	175	Coalbed Methane; Emissions; Energy Security; Gas Hydrates; Shale Gas; Tight Gas	141
78	Analysis of Heat Transfer Effects on Gas Production from Methane Hydrate by Depressurization	Zhao, JF; Liu, D; Yang, MJ; Song, YC	International Journal of Heat and Mass Transfer	2014	77		529	541	Methane Hydrate; Heat Transfer; Dissociation; Depressurization; Conduction; Convection	141
79	How Sulfate-driven Anaerobic Oxidation of Methane Affects the Sulfur Isotopic Composition of Pyrite: A Sims Study from the South China Sea	Lin, ZY; Sun, XM; Peckmann, J; Lu, Y; Xu, L; Strauss, H; Zhou, HY; Gong, JL; Lu, HF; Teichert, BMA	Chemical Geology	2016	440		26	41	Sulfur Isotopes; Pyrite; Sulfate-driven Anaerobic Oxidation of Methane; Organiclastic Sulfate Reduction; Sims; South China Sea	140
80	Gas Hydrate Inhibition: A Review of the Role of Ionic Liquids	Tariq, M; Rooney, D; Othman, E; Aparicio, S; Atilhan, M; Khraisheh, M	Industrial & Engineering Chemistry Research	2014	53	46	1785 5	1786 8	Cfd Analysis; Viscosity; Simulation; Gas	140
81	Effect of Biofriendly Amino Acids on the Kinetics of Methane Hydrate Formation and Dissociation	Veluswamy, HP; Lee, PY; Premasinghe, K; Linga, P	Industrial & Engineering Chemistry Research	2017	56	21	6145	6154	Clathrate Hydrate; Methane Hydrate; Gas; Inhibitors; Polymers; Growth	136
82	Gas Production Behavior from Hydrate-bearing Fine Natural Sediments through Optimized Step-wise Depressurization	Zhao, JF; Liu, YL; Guo, XW; Wei, RP; Yu, TB; Xu, L; Sun, LJ; Yang, L	Applied Energy	2020	260				Natural Gas Hydrate; Fine Natural Marine Sediment; Step-wise Depressurization; Pressure Gradient; Sensible Heat	134
83	Advances in the Experimental Exploration of Water's Phase Diagram	Salzmann, CG	Journal of Chemical Physics	2019	150	6			Coal-bed Methane; Pseudomonas-aeruginosa; Surface-tension; Co2 Capture; Flue-gas; Recovery; Kinetics	133
84	Corrosion Inhibition of Offshore Oil and Gas Production Facilities Using Organic Compound Inhibitors - A Review	Olajire, AA	Journal of Molecular Liquids	2017	248		775	808	Corrosion; Offshore Metallic Structures; Organic Corrosion Inhibitors; Corrosion Tests	133
85	Inhibition of Methane and Natural Gas Hydrate Formation by Altering the Structure of Water with Amino Acids	Sa, JH; Kwak, GH; Han, K; Ahn, D; Cho, SJ; Lee, JD; Lee, KH	Scientific Reports	2016	6				Nan	133
86	Experimental Determination of Permeability of Porous Media in the Presence of Gas Hydrates	Delli, ML; Grozic, JLH	Journal of Petroleum Science and Engineering	2014	120		1	9	Gas Hydrates; Relative Permeability; Hydrate Formation; Quantitative Analysis; Hybrid Modeling	133
87	Production Potential and Stability of	Sun, JX; Zhang, L; Ning, FL; Lei,	Marine and	2017	86		447	473	Gas Hydrate; Production Potential;	132

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	Hydrate-bearing Sediments at the Site Gmgs3-w19 in the South China Sea: A Preliminary Feasibility Study	HW; Liu, TL; Hu, GW; Lu, HL; Lu, JA; Liu, CL; Jiang, GS; Liang, JQ; Wu, NY	Petroleum Geology						Geomechanical Response; Numerical Simulation	
88	Kinetic Hydrate Inhibitor Studies for Gas Hydrate Systems: A Review of Experimental Equipment and Test Methods	Ke, W; Kelland, MA	Energy & Fuels	2016	30	12	10015	10028	Methane-hydrate; Relative Permeability; Porous-media; Thermal-stimulation; Computed-tomography; Gas-production; Network; Water; Depressurization; Dissociation	131
89	A Review on the Role of Amino Acids in Gas Hydrate Inhibition, Co2 Capture and Sequestration, and Natural Gas Storage	Bavoh, CB; Lal, B; Osei, H; Sabil, KM; Mukhtar, H	Journal of Natural Gas Science and Engineering	2019	64		52	71	Gas Hydrates; Amino Acids; Co2 Capture; Natural Gas Storage; Thermodynamics; Kinetics	130
90	Morphology Study of Methane Hydrate Formation and Dissociation in the Presence of Amino Acid	Veluswamy, HP; Hong, QW; Linga, P	Crystal Growth & Design	2016	16	10	5932	5945	Natural-gas Hydrate; Effective Stress; Saturation; Sediments; Pressure; Trough; Soil	130
91	Large Scale Experimental Evaluation to Methane Hydrate Dissociation below Quadruple Point in Sandy Sediment	Wang, Y; Feng, JC; Li, XS; Zhang, Y; Li, G	Applied Energy	2016	162		372	381	Methane Hydrate; Dissociation; Large Scale; Depressurization; Quadruple Point; Sandy Sediment	130
92	Mechanisms of Methane Hydrate Formation in Geological Systems	You, K; Flemings, PB; Malinverno, A; Collett, TS; Darnell, K	Reviews of Geophysics	2019	57	4	1146	1196	Gas Hydrate; Reactive Transport Modeling; Methanogenesis; Free Gas Flow; Capillary Pressure; Fracture	129
93	High-resolution Carbon Isotope Records of the Toarcian Oceanic Anoxic Event (early Jurassic) from North America and Implications for the Global Drivers of the Toarcian Carbon Cycle	Them, TR; Gill, BC; Caruthers, AH; Gröcke, DR; Tulskey, ET; Martindale, RC; Poulton, TP; Smith, PL	Earth and Planetary Science Letters	2017	459		118	126	Toarcian Oceanic Anoxic Event; Early Jurassic; Carbon Cycle; Terrestrial Methanogenesis; Abrupt Climate Change	129
94	Natural Gas Storage and Transportation within Gas Hydrate of Smaller Particle: Size Dependence of Self-preservation Phenomenon of Natural Gas Hydrate	Mimachi, H; Takeya, S; Yoneyama, A; Hyodo, K; Takeda, T; Gotoh, Y; Murayama, T	Chemical Engineering Science	2014	118		208	213	Clathrate Hydrate; Natural Gas Hydrate; Self-preservation; Particle Size; Ice Film	129
95	Surfactant-based Promotion to Gas Hydrate Formation for Energy Storage	He, Y; Sun, MT; Chen, C; Zhang, GD; Chao, K; Lin, Y; Wang, F	Journal of Materials Chemistry A	2019	7	38	21634	21661	Computer-simulations; Block-copolymer; Drug-delivery; Nanoparticles; Behavior; Permeability; Morphology; Nanopores; Hydration; Vesicles	128
96	Sand Production Model in Gas Hydrate-bearing Sediments	Uchida, S; Klar, A; Yamamoto, K	International Journal of Rock Mechanics and Mining Sciences	2016	86		303	316	Sand Production; Gas Hydrate; Hydrate-bearing Sediments; Gas Production; Hydrate Dissociation; Numerical Modeling	128
97	A Review of Reactor Designs and Materials	Linga, P; Clarke, MA	Energy & Fuels	2017	31	1	1	13	Afanasyi-nikitin Seamount; Indian-ocean;	127

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	Employed for Increasing the Rate of Gas Hydrate Formation								Ferromanganese Crusts; Elements; System	
98	Experimental Investigations on Energy Recovery from Water-saturated Hydrate Bearing Sediments Via Depressurization Approach	Chong, ZR; Yin, ZY; Tan, JHC; Linga, P	Applied Energy	2017	204		1513	1525	Energy Recovery; Methane Hydrates; Unconventional Gas; Hydrate Bearing Sediment; Depressurization; Gas Production	127
99	Natural Gas Hydrate Resources and Hydrate Technologies: A Review and Analysis of the Associated Energy and Global Warming Challenges	Yu, YS; Zhang, XW; Liu, JW; Lee, YH; Li, XS	Energy & Environmental Science	2021	14	11	5611	5668	Continental-margin Sediments; Northern Arabian Sea; Last Glacial Maximum; Gas Hydrate; Authigenic Carbonates; Cold Seeps; Fluid-flow; Methane; Water; Enrichment	126
100	Carbon Dioxide Sequestration: Influence of Porous Media on Hydrate Formation Kinetics	Bhattacharjee, G; Kumar, A; Sakpal, T; Kumar, R	Acs Sustainable Chemistry & Engineering	2015	3	6	1205	1214	Gas Hydrate; Particle Size; Gas Uptake; Geological Sequestration; Bed Height	126
101	Adsorption Mechanism of Inhibitor and Guest Molecules on the Surface of Gas Hydrates	Yagasaki, T; Matsumoto, M; Tanaka, H	Journal of the American Chemical Society	2015	137	37	1207 9	1208 5	Ellipsoidal Inclusion; Thermoelastic Analysis; Elastic Field; Simulation; Element; Model	126
102	Experimental Study on the Hydrate Dissociation in Porous Media by Five-spot Thermal Huff and Puff Method	Wang, Y; Li, XS; Li, G; Huang, NS; Feng, JC	Fuel	2014	117		688	696	Methane Hydrate; Three-dimensional; Thermal Stimulation; Depressurization; Thermal Huff and Puff	126
103	Clathrate Hydrate Technology for Cold Storage in Air Conditioning Systems	Wang, XL; Dennis, M; Hou, LZ	Renewable & Sustainable Energy Reviews	2014	36		34	51	Clathrate Hydrate; Cold Storage Air Conditioning System; Improvement Method; System Performance	126
104	A High-resolution Benthic Stable-isotope Record for the South Atlantic: Implications for Orbital-scale Changes in Late Paleocene-early Eocene Climate and Carbon Cycling	Littler, K; Röhl, U; Westerhold, T; Zachos, JC	Earth and Planetary Science Letters	2014	401		18	30	Paleogene; Stable Isotopes; Benthic Foraminifera; Cyclostratigraphy; Hyperthermals; Ocean Drilling Program	126
105	Ultra-rapid Uptake and the Highly Stable Storage of Methane as Combustible Ice	Bhattacharjee, G; Goh, MN; Arumuganainar, SEK; Zhang, Y; Linga, P	Energy & Environmental Science	2020	13	12	4946	4961	Methane Hydrate; Brownian-motion; Co2 Hydrate; Diffusion; Dynamics; Law; Dissociation; Nucleation; Viscosity; Validity	124
106	Timescales of Methane Seepage on the Norwegian Margin Following Collapse of the Scandinavian Ice Sheet	Crémière, A; Lepland, A; Chand, S; Sahy, D; Condon, DJ; Noble, SR; Martma, T; Thorsnes, T; Sauer, S; Brunstad, H	Nature Communications	2016	7				Phase-equilibria; Methane Hydrate; Aqueous-solutions; Improved Model; Natural-gas; Dissociation; Water; Pressure; Capture; Nacl	124
107	Formation and Dissociation Kinetics of Methane Hydrates in Seawater and Silica Sand	Mekala, P; Babu, P; Sangwai, JS; Linga, P	Energy & Fuels	2014	28	4	2708	2716	Gas Hydrate; Constitutive Model; Methane; Dissociation; Permeability; Behavior	124

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108	Geomechanical Issues in the Exploitation of Natural Gas Hydrate	Yan, CL; Ren, X; Cheng, YF; Song, BJ; Li, Y; Tian, WQ	Gondwana Research	2020	81		403	422	Natural Gas Hydrate; Geomechanical Issues; Borehole Stability; Hydraulic Fracturing; Sand Production; Seabed Landslides	123
109	A Novel Conceptual Design of Hydrate Based Desalination (hydesal) Process by Utilizing Lng Cold Energy	He, TB; Nair, SK; Babu, P; Linga, P; Karimi, IA	Applied Energy	2018	222		13	24	Gas Hydrates; Lng Cold Energy; Desalination; Pure Water; Colden-hydesal Process; Simulation and Optimization; Freeze Desalination	123
110	Methane Storage in A Hydrated Form as Promoted by Leucines for Possible Application to Natural Gas Transportation and Storage	Liu, Y; Chen, BY; Chen, YL; Zhang, SH; Guo, WQ; Cai, YH; Tan, B; Wang, WX	Energy Technology	2015	3	8	815	819	Clathrates; Hydrates; Leucine; Methane Storage; Natural Gas	123
111	Cryosphere Carbon Dynamics Control Early Toarcian Global Warming and Sea Level Evolution	Ruebsam, W; Mayer, B; Schwark, L	Global and Planetary Change	2019	172		440	453	Global Warming; Cryosphere Demise; Glacio-eustatic Sea-level Change; Pliensbachian Icehouse; Toarcian Cie; Toarcian Oae	122
112	Enhancement of Gas Production from Methane Hydrate Reservoirs by the Combination of Hydraulic Fracturing and Depressurization Method	Feng, YC; Chen, L; Suzuki, A; Kogawa, T; Okajima, J; Komiya, A; Maruyama, S	Energy Conversion and Management	2019	184		194	204	Methane Hydrate; Gas Production; Hydraulic Fracturing; Depressurization	122
113	Nucleation of Methane Hydrates at Moderate Subcooling by Molecular Dynamics Simulations	Jiménez-Angeles, F; Firoozabadi, A	Journal of Physical Chemistry C	2014	118	21	11310	11318	Seawater Desalination; Carbon-dioxide; Gas-hydrate; Water; Methane; Nanoparticles; Dissociation; Cyclopentane; Technology; Generation	121
114	A Review on the Role and Impact of Various Additives as Promoters/inhibitors for Gas Hydrate Formation	Nasir, Q; Suleman, H; Elsheikh, YA	Journal of Natural Gas Science and Engineering	2020	76				Additives; Clathrates; Flow Assurance; Gas Hydrates; Natural Gas; Separation	120
115	India National Gas Hydrate Program Expedition 02 Summary of Scientific Results: Gas Hydrate Systems along the Eastern Continental Margin of India	Collett, TS; Boswell, R; Waite, WF; Kumar, P; Roy, SK; Chopra, K; Singh, SK; Yamada, Y; Tenma, N; Pohlman, J; Zyrianova, M	Marine and Petroleum Geology	2019	108		39	142	Gas Hydrate; Gas; Resources; India; Krishna-godavari Basin; Mahanadi Basin	118
116	Carbon Dioxide Hydrate Kinetics in Porous Media with and without Salts	Yang, SHB; Babu, P; Chua, SFS; Linga, P	Applied Energy	2016	162		1131	1140	Gas Hydrates; Co2 Storage; Porous Media; Energy Recovery; Co2 Sequestration	118
117	Unusual Behavior of Propane as A Co-guest during Hydrate Formation in Silica Sand: Potential Application to Seawater Desalination and Carbon Dioxide Capture	Babu, P; Kumar, R; Linga, P	Chemical Engineering Science	2014	117		342	351	Gas Hydrates; Propane Hydrate; Pre-combusuon Capture; Carbon Dioxide Capture; Enhanced Kinetics; Desalination	118
118	Geologic Implications of Gas Hydrates in the Offshore of India: Results of the National Gas Hydrate Program Expedition 01	Collett, TS; Boswell, R; Cochran, JR; Kumar, P; Lall, M; Mazumdar, A; Ramana, MV; Ramprasad, T; Riedel,	Marine and Petroleum Geology	2014	58		3	28	Gas Hydrate; Gas; Resources; India; Krishna-godavari Basin; Mahanadi Basin; Andaman Sea; Kerala-konkan Basin	118

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		M; Sain, K; Sathe, AV; Vishwanath, K								
119	Analyzing the Effects of Inhomogeneity on the Permeability of Porous Media Containing Methane Hydrates through Pore Network Models Combined with Ct Observation	Yang, L; Ai, L; Xue, KH; Ling, Z; Li, YH	Energy	2018	163		27	37	Inhomogeneous Porous Media; Permeability; Pore Network Model; Gas Hydrate; X-ray Ct	117
120	Production Performance and Numerical Investigation of the 2017 Offshore Methane Hydrate Production Test in the Nankai Trough of Japan	Yu, T; Guan, GQ; Abudula, A	Applied Energy	2019	251				Oceanic Methane Hydrate; Nankai Trough; Vertical Well; Depressurization; Production Interval	116
121	Accumulation Features and Mechanisms of High Saturation Natural Gas Hydrate in Shenhu Area, Northern South China Sea	Zhang, W; Liang, JQ; Lu, JA; Wei, JG; Su, PB; Fang, YX; Guo, YQ; Yang, SX; Zhang, GX	Petroleum Exploration and Development	2017	44	5	708	719	Natural Gas Hydrate; High Saturation; Distribution Characteristics; Accumulation Mechanism; Shenhu Area; Pearl River Mouth Basin; Northern South China Sea	115
122	Genice: Hydrogen-disordered Ice Generator	Matsumoto, M; Yagasaki, T; Tanaka, H	Journal of Computational Chemistry	2018	39	1	61	64	Hydrogen-disordered Ice; Lattice Generator; Ice Polymorphs; Clathrate Hydrates; Zeolite	114
123	Distribution and Characteristics of Natural Gas Hydrates in the Shenhu Sea Area, South China Sea	Wei, JG; Fang, YX; Lu, HL; Lu, HF; Lu, JA; Liang, JQ; Yang, SX	Marine and Petroleum Geology	2018	98		622	628	Natural Gas Hydrate; Raman Spectra; Gas Composition; Isotope Composition; South China Sea	114
124	Pectin as An Extraordinary Natural Kinetic Hydrate Inhibitor	Xu, SR; Fan, SS; Fang, ST; Lang, XM; Wang, YH; Chen, J	Scientific Reports	2016	6				Fram Strait; Western Svalbard; Arctic-ocean; Benthic Foraminifera; Nordic Seas; Ice-sheet; Paleoclimatographic Evolution; Millennial Timescale; Anaerobic Oxidation; Methane Seepage	114
125	Hydrate-based Technology for Co2 Capture from Fossil Fuel Power Plants	Yang, MJ; Song, YC; Jiang, LL; Zhao, YC; Ruan, XK; Zhang, Y; Wang, SR	Applied Energy	2014	116		26	40	Co2 Capture; Hydrate-based Technology; Gas Separation; Fossil Fuel Power Plant	114
126	Methane Transformation by Photocatalysis	Li, XY; Wang, C; Tang, JW	Nature Reviews Materials	2022	7	8	617	632	Mechanical-properties; Bearing Sediments; Hikurangi Margin; Floor Heave; Stability; Room; Landslide; Behavior; Sea; Instability	113
127	Experimental Measurement and Mathematical Model of Permeability with Methane Hydrate in Quartz Sands	Li, G; Wu, DM; Li, XS; Lv, QN; Li, C; Zhang, Y	Applied Energy	2017	202		282	292	Methane Hydrate; Quartz Sands; Saturation; Permeability; Model	113
128	the Build-up, Configuration, and Dynamical Sensitivity of the Eurasian Ice-sheet Complex to Late Weichselian Climatic and Oceanic Forcing	Patton, H; Hubbard, A; Andreassen, K; Winsborrow, M; Stroeve, AP	Quaternary Science Reviews	2016	153		97	121	Ice-sheet Modelling; Eurasian Ice Sheet Complex; Late Weichselian; Palaeo Ice-sheet Reconstruction; Dynamic Ice Behaviour; Palaeo Climate; Landscape Evolution; Subglacial	113

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									Erosion; Barents Sea Ice Sheet; Fennoscandian Ice Sheet	
129	Permeability of Laboratory-formed Porous Media Containing Methane Hydrate: Observations Using X-ray Computed Tomography and Simulations with Pore Network Models	Wang, JQ; Zhao, JF; Yang, MJ; Li, YH; Liu, WG; Song, YC	Fuel	2015	145		170	179	Natural Gas Hydrate; Saturation; Permeability; Pore Network Model; X-ray Computed Tomography	113
130	Hydrate Reformation Characteristics in Natural Gas Hydrate Dissociation Process: A Review	Yang, MJ; Zhao, J; Zheng, JN; Song, YC	Applied Energy	2019	256				Gas Hydrate Exploitation; Hydrate Reformation; Thermal Stimulation; Depressurization; Inhibitor	111
131	Fluid Flow Mechanisms and Heat Transfer Characteristics of Gas Recovery from Gas-saturated and Water-saturated Hydrate Reservoirs	Wang, Y; Feng, JC; Li, XS; Zhang, Y; Chen, ZY	International Journal of Heat and Mass Transfer	2018	118		1115	1127	Methane Hydrate; Gas-saturated; Water-saturated; Heat Transfer; Depressurization; Thermal Stimulation	111
132	Effect of Graphite Nanoparticles on Promoting Co ₂ Hydrate Formation	Zhou, SD; Yu, YS; Zhao, MM; Wang, SL; Zhang, GZ	Energy & Fuels	2014	28	7	4694	4698	Pressure; Hfc-134a	111
133	Pressure-core-based Reservoir Characterization for Geomechanics: Insights from Gas Hydrate Drilling during 2012-2013 at the Eastern Nankai Trough	Yoneda, J; Masui, A; Konno, Y; Jin, Y; Kida, M; Katagiri, J; Nagao, J; Tenma, N	Marine and Petroleum Geology	2017	86		1	16	Methane Hydrate; Triaxial Test; Strength; Permeability; Compressibility; Pressure Core	110
134	Energy Recovery from Simulated Clayey Gas Hydrate Reservoir Using Depressurization by Constant Rate Gas Release, Thermal Stimulation and Their Combinations	Nair, VC; Prasad, SK; Kumar, R; Sangwai, JS	Applied Energy	2018	225		755	768	Combined Thermal Stimulation and Depressurization; Confined Clay Hydrate Reservoir; Depressurization; Gas Hydrate; Methane; Thermal Stimulation	109
135	Analytic Modeling and Large-scale Experimental Study of Mass and Heat Transfer during Hydrate Dissociation in Sediment with Different Dissociation Methods	Wang, Y; Feng, JC; Li, XS; Zhang, Y; Li, G	Energy	2015	90		1931	1948	Hydrate Dissociation; Heat and Mass Transfer; Analytical Solution; Depressurization; Thermal Stimulation	109
136	Mechanical Behavior of Hydrate-bearing Pressure-core Sediments Visualized under Triaxial Compression	Yoneda, J; Masui, A; Konno, Y; Jin, Y; Egawa, K; Kida, M; Ito, T; Nagao, J; Tenma, N	Marine and Petroleum Geology	2015	66		451	459	Pressure Core; Hydrate-bearing Sediments; Triaxial Test; Hydrate Saturation; Strength; Stiffness	109
137	Vibrational Spectral Signature of the Proton Defect in the Three-dimensional H (HO) Cluster	Fournier, JA; Johnson, CJ; Wolke, CT; Weddle, GH; Wolk, AB; Johnson, MA	Science	2014	344	61 87	1009	1012	Authigenic Carbonate; Anaerobic Oxidation; Kuroshio Current; Biogenic Barium; Climate System; Western Slope; North Pacific; Mg/ca Ratios; Pore-water; Dynamics	109
138	Complex Gas Hydrate System in A Gas Chimney, South China Sea	Ye, JL; Wei, JG; Liang, JQ; Lu, JG; Lu, HL; Zhang, W	Marine and Petroleum	2019	104		29	39	Cold Seep; Gas Hydrate; Gas Composition; South China Sea; Authigenic Carbonate; Gas Chimney	108

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			Geology							
139	Strengthening Mechanism of Cemented Hydrate-bearing Sand at Microscales	Yoneda, J; Jin, Y; Katagiri, J; Tenma, N	Geophysical Research Letters	2016	43	14	7442	7450	Hydrate; Micro-x-ray Ct; Triaxial Test; Shear; Strength	108
140	Mechanical Characteristics of Hydrate-bearing Sediment: A Review	Wu, P; Li, YH; Sun, X; Liu, WG; Song, YC	Energy & Fuels	2021	35	2	1041	1057	Gas-hydrate; Mixed-gas; Equilibrium; Methane; Quantum; Water; Ch4	107
141	Wellbore Stability Analysis during Drilling through Marine Gas Hydrate-bearing Sediments in Shenhu Area: A Case Study	Sun, JX; Ning, FL; Lei, HW; Gai, XR; Sánchez, M; Lu, JG; Li, YL; Liu, LL; Liu, CL; Wu, NY; He, Y; Wu, M	Journal of Petroleum Science and Engineering	2018	170		345	367	Natural Gas Hydrates; Drilling Mud Invasion; Wellbore Stability; Drilling Mud Property; Reservoir Physical Property	107
142	Review the Impact of Nanoparticles on the Thermodynamics and Kinetics of Gas Hydrate Formation	Nashed, O; Partoon, B; Lal, B; Sabil, KM; Shariff, AM	Journal of Natural Gas Science and Engineering	2018	55		452	465	Gas Hydrates; Kinetic Hydrate Promoters; Nanoparticles; Gas Consumption; Induction Time	107
143	Co2 Capture by Injection of Flue Gas Or Co2 - N2 Mixtures into Hydrate Reservoirs: Dependence of CO2 Capture Efficiency on Gas Hydrate Reservoir Conditions	Hassanpouryouzband, A; Yang, JH; Tohidi, B; Chuvilin, E; Istomin, V; Bukhanov, B; Cheremisin, A	Environmental Science & Technology	2018	52	7	4324	4330	Gas Hydrate; Liquefaction; System; Cycle; Preservation; Dissociation; Equilibrium; Pressure; Enthalpy; Ngl	107
144	Size Effect of Porous Media on Methane Hydrate Formation and Dissociation in An Excess Gas Environment	Chong, ZR; Yang, MJ; Khoo, BC; Linga, P	Industrial & Engineering Chemistry Research	2016	55	29	7981	7991	Large Igneous Province; Ontong Java Plateau; Vocontian Basin; Carbon-isotope; Black Shales; Prebetic Zone; Time-series; U-pb; Evolution; Stratigraphy	106
145	Characterization of Natural Gas Hydrate Recovered from Pearl River Mouth Basin in South China Sea	Liu, CL; Meng, QG; He, XL; Li, CF; Ye, YG; Zhang, GX; Liang, JQ	Marine and Petroleum Geology	2015	61		14	21	Natural Gas Hydrate; Pearl River Mouth (prm) Basin; Raman Spectra; Gas Composition; Grain Size; South China Sea (scs)	106
146	Experimental Investigation of Methane Hydrate Formation in the Presence of Copper Oxide Nanoparticles and Sds	Najibi, H; Shayegan, MM; Heidary, H	Journal of Natural Gas Science and Engineering	2015	23		315	323	Gas Hydrate Formation; Methane Hydrates; Cuo Nanoparticles; Sds	106
147	Cementation Failure Behavior of Consolidated Gas Hydrate-bearing Sand	Wu, P; Li, YH; Liu, WG; Sun, X; Kong, XJ; Song, YC	Journal of Geophysical Research-solid Earth	2020	125	1			Assisted Differential Evolution; Support Vector Regression; Uncertainty Quantification; Fractured Reservoirs; Surrogate-model; Porous-media; Parameterization	105
148	A Review of Gas Hydrate Nucleation Theories and Growth Models	Ke, W; Svartaas, TM; Chen, DY	Journal of Natural Gas Science and Engineering	2019	61		169	196	Gas Hydrates; Properties; Nucleation Theories; Growth Models; Controlling Mechanisms	105
149	Pore-scale Determination of Gas Relative Permeability in Hydrate-bearing Sediments	Chen, XY; Verma, R; Espinoza, DN; Prodanovic, M	Water Resources Research	2018	54	1	600	608	Formation Kinetics; Gas; Nucleation	105

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	Using X-ray Computed Micro-tomography and Lattice Boltzmann Method									
150	Progress in China's Unconventional Oil & Gas Exploration and Development and Theoretical Technologies	Zou, CN; Yang, Z; Zhu, RK; Zhang, GS; Hou, LH; Wu, ST; Tao, SZ; Yuan, XJ; Dong, DZ; Wang, YM; Wang, L; Huang, JL; Wang, SF	Acta Geologica Sinica-english Edition	2015	89	3	938	971	Unconventional Oil and Gas; Unconventional Petroleum Geology; Fine-grained Sedimentology; Unconventional Reservoir Geology; "man-made Reservoir"; Development; Micro-; Nano- Scale Pore Throat; Tight Gas; Tight Oil; Shale Gas; Shale Oil	105
151	A Seepage Gas Hydrate System in Northern South China Sea: Seismic and Well Log Interpretations	Sha, ZB; Liang, JQ; Zhang, GX; Yang, SX; Lu, JG; Zhang, ZJ; McConnell, DR; Humphrey, G	Marine Geology	2015	366		69	78	Gas Hydrate; Fluid Flow; Seismic Interpretation; Well Log Interpretation; South China Sea	105
152	Effect of Long-term Storage and Thermal History on the Gas Content of Natural Gas Hydrate Pellets under Ambient Pressure	Mimachi, H; Takahashi, M; Takeya, S; Gotoh, Y; Yoneyama, A; Hyodo, K; Takeda, T; Murayama, T	Energy & Fuels	2015	29	8	4827	4834	Haines Jumps; Displacement; Multiphase; Tomography; Evolution	105
153	Effect of Bubble Formation on the Dissociation of Methane Hydrate in Water: A Molecular Dynamics Study	Yagasaki, T; Matsumoto, M; Andoh, Y; Okazaki, S; Tanaka, H	Journal of Physical Chemistry B	2014	118	7	1900	1906	Methane Hydrate; Amino-acids; Water; Part; Calibration; Solubility	105
154	Flow Characteristics and Rheological Properties of Natural Gas Hydrate Slurry in the Presence of Anti-agglomerant in A Flow Loop Apparatus	Yan, KL; Sun, CY; Chen, J; Chen, LT; Shen, DJ; Liu, B; Jia, ML; Niu, M; Lv, YN; Li, N; Song, ZY; Niu, SS; Chen, GJ	Chemical Engineering Science	2014	106		99	108	Hydrate; Slurry; Rile Logical Properties; Flow Characteristics; Anti-agglomerant	105
155	Review and Prospects of Hydrate Cold Storage Technology	Cheng, CX; Wang, F; Tian, YJ; Wu, XH; Zheng, JL; Zhang, J; Li, LW; Yang, PL; Zhao, JF	Renewable & Sustainable Energy Reviews	2020	117				Hydrate; Cold Storage Media; Reinforcement Method; Cold Storage System; Application	104
156	Prediction of Hydrate Deposition in Pipelines to Improve Gas Transportation Efficiency and Safety	Zhang, JB; Wang, ZY; Liu, S; Zhang, WG; Yu, J; Sun, BJ	Applied Energy	2019	253				Gas Transportation Efficiency and Safety; Forecast Model; Hydrate Deposition; Water Condensation	104
157	Permeability Variation and Anisotropy of Gas Hydrate-bearing Pressure-core Sediments Recovered from the Krishna-godavari Basin, Offshore India	Yoneda, J; Oshima, M; Kida, M; Kato, A; Konno, Y; Jin, Y; Jang, JB; Waite, WF; Kumar, P; Tenma, N	Marine and Petroleum Geology	2019	108		524	536	Methane Hydrate; Triaxial Test; Permeability; Anisotropy; Pressure Core; Nghp-02	104
158	Some Current Challenges in Clathrate Hydrate Science: Nucleation, Decomposition and the Memory Effect	Ripmeester, JA; Alavi, S	Current Opinion in Solid State & Materials Science	2016	20	6	344	351	Clathrate Hydrate; Hydrate Nucleation; Heterogeneous Nucleation; Homogeneous Nucleation; Memory Effects	104
159	Numerical Evaluation of the Methane Production from Unconfined Gas Hydrate-bearing Sediment by Thermal	Jin, GR; Xu, TF; Xin, X; Wei, MC; Liu, CL	Journal of Natural Gas Science and	2016	33		497	508	Natural Gas Hydrate; Depressurization; Thermal Stimulation; Water Injection; Well Placement; South China Sea	104

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	Stimulation and Depressurization in Shenhu Area, South China Sea		Engineering							
160	Prediction of the Phase Equilibria of Methane Hydrates Using the Direct Phase Coexistence Methodology	Michalis, VK; Costandy, J; Tsimpanogiannis, IN; Stubos, AK; Economou, IG	Journal of Chemical Physics	2015	142	4			Methane Hydrate; Mechanical-behavior; Thermal-stimulation; Porous-media; Shenhu Area; Strength; Dissociation; Stiffness; Wellbore; Energy	104
161	Ch4 Recovery and Co2 Sequestration Using Flue Gas in Natural Gas Hydrates as Revealed by A Micro-differential Scanning Calorimeter	Lee, Y; Kim, Y; Lee, J; Lee, H; Seo, Y	Applied Energy	2015	150		120	127	Gas Hydrate; Flue Gas; Co2 Sequestration; Replacement; Calorimeter	104
162	Highly Confined Water: Two-dimensional Ice, Amorphous Ice, and Clathrate Hydrates	Zhao, WH; Wang, L; Bai, J; Yuan, LF; Yang, JL; Zeng, XC	Accounts of Chemical Research	2014	47	8	2505	2513	Stabilization; Attenuation; Propagation; Simulation; Velocity	104
163	Large Submarine Landslides on Continental Slopes Geohazards, Methane Release, and Climate Change	Talling, PJ; Clare, M; Urlaub, M; Pope, E; Hunt, JE; Watt, SFL	Oceanography	2014	27	2	32	45	Carbon-dioxide Capture; Methane Hydrate; Storage; Ch4; Sequestration; Dissociation; Recovery; Impact; Tba	104
164	Production Behaviors and Heat Transfer Characteristics of Methane Hydrate Dissociation by Depressurization in Conjunction with Warm Water Stimulation with Dual Horizontal Wells	Feng, JC; Wang, Y; Li, XS; Li, G; Chen, ZY	Energy	2015	79		315	324	Hydrate Dissociation; Depressurizing Rate; Heat Transfer Characteristics; Dual Horizontal Well	103
165	Going Green and Cold: Biosurfactants from Low-temperature Environments to Biotechnology Applications	Perfumo, A; Banat, IM; Marchant, R	Trends in Biotechnology	2018	36	3	277	289	Rich Sedimentary-rocks; Fold-thrust Belt; Cretaceous Boundary; U-pb; Petroleum System; Volgian Stage; Gas-hydrate; Basin; Age; Co2	102
166	Gas Production from Hydrates by Ch4-co2 Replacement	Wang, XH; Sun, YF; Wang, YF; Li, N; Sun, CY; Chen, GJ; Liu, B; Yang, LY	Applied Energy	2017	188		305	314	Gas Production; Hydrate; Co2/h-2; Replacement; Co2 Sequestration	102
167	Hydrophobic Effect on Gas Hydrate Formation in the Presence of Additives	Nguyen, NN; Nguyen, AV	Energy & Fuels	2017	31	10	1031 1	1032 3	Blockchain; Things	102
168	Effect of the Amino Acid L-histidine on Methane Hydrate Growth Kinetics	Bhattacharjee, G; Choudhary, N; Kumar, A; Chakrabarty, S; Kumar, R	Journal of Natural Gas Science and Engineering	2016	35		1453	1462	Gas Hydrate; Amino Acid; Kinetics; Molecular Dynamic Simulation; Crystal Growth	102
169	Kinetics of Methane Hydrate Replacement with Carbon Dioxide and Nitrogen Gas Mixture Using in Situ Nmr Spectroscopy	Cha, MJ; Shin, K; Lee, H; Moudrakovski, IL; Ripmeester, JA; Seo, Y	Environmental Science & Technology	2015	49	3	1964	1971	South China Sea; Cold-seep; Metal Concentrations; Authigenic Carbonates; Bathymodiolus-azoricus; Anaerobic Oxidation; Hydrocarbon Seeps; Stable Carbon; Fluid Sources; Gas Hydrate	102

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170	Permeability of Hydrate-bearing Sediments	Ren, XW; Guo, ZY; Ning, FL; Ma, SZ	Earth-science Reviews	2020	202				Permeability; Hydrate-bearing Sediment; Pore Habit; Challenges and Prospects	101
171	Investigation on the Roles of Activated Carbon Particle Sizes on Methane Hydrate Formation and Dissociation	Siangsai, A; Rangsunvigit, P; Kitiyanan, B; Kulprathipanja, S; Linga, P	Chemical Engineering Science	2015	126		383	389	Methane Hydrate; Gas Hydrates; Hydrate Formation; Hydrate Dissociation; Activated Carbon; Particle Size	101
172	Natural Gas Hydrate Formation and Inhibition in Gas/crude Oil/aqueous Systems	Daraboina, N; Pachitsas, S; von Solms, N	Fuel	2015	148		186	190	Gas Hydrate; Crude Oil; Multi Phase Flow; Kinetic Inhibition; Water Cut	101
173	Kinetic Enhancement of Capturing and Storing Greenhouse Gas and Volatile Organic Compound: Micro-mechanism and Micro-structure of Hydrate Growth	Zhang, LX; Kuang, YM; Dai, S; Wang, JQ; Zhao, JF; Song, YC	Chemical Engineering Journal	2020	379				Co2 Capture; Volatile Organic Compound Capture; Crystal Hydrate Growth; Microstructural Features; Dynamic Enhancement	100
174	Microstructure Evolution of Hydrate-bearing Sands during Thermal Dissociation and Ensued Impacts on the Mechanical and Seepage Characteristics	Wu, P; Li, YH; Liu, WG; Liu, Y; Wang, DY; Song, YC	Journal of Geophysical Research-solid Earth	2020	125	5			Tetrahydrofuran Clathrate Hydrate; Crystal-growth; Liquid Water; Capacity; Methane; Melt	100
175	The Interior Structure of Ceres as Revealed by Surface Topography	Fu, RR; Ermakov, AI; Marchi, S; Castillo-Rogez, JC; Raymon, CA; Hager, BH; Zuber, MT; King, SD; Bland, MT; De Sanctis, MC; Preusker, F; Park, RS; Russell, CT	Earth and Planetary Science Letters	2017	476		153	164	Ceres; Geodynamics; Geophysics; Rheology; Internal Structure; Differentiation	100
176	Effects of Climate Change on Methane Emissions from Seafloor Sediments in the Arctic Ocean: A Review	James, RH; Bousquet, P; Bussmann, I; Haeckel, M; Kipfer, R; Leifer, I; Niemann, H; Ostrovsky, I; Piskozub, J; Rehder, G; Treude, T; Vielstädte, L; Greinert, J	Limnology and Oceanography	2016	61		S283	S299	Layered Double Hydroxide; Cold-storage Material; Thermal-conductivity; Co2 Hydrate; Clathrate Hydrate; Dispersion Behavior; Carbon Nanotubes; Heat-transfer; Tetrahydrofuran; Nanoparticles	100
177	Gas Hydrate Inhibition by Perturbation of Liquid Water Structure	Sa, JH; Kwak, GH; Han, K; Ahn, D; Lee, KH	Scientific Reports	2015	5				Carbon-dioxide; Clathrate Hydrate; Reservoir Permeability; Hydrocarbon Reservoirs; Supercritical Co2; Phase-equilibrium; Pore-size; Methane; Nucleation; Growth	100
178	Systematic Evaluation of Tetra-n-butyl Ammonium Bromide (tbab) for Carbon Dioxide Capture Employing the Clathrate Process	Babu, P; Chin, WI; Kumar, R; Linga, P	Industrial & Engineering Chemistry Research	2014	53	12	4878	4887	Liquid Water; Equilibrium-constant; Infrared-spectrum; Melting-point; Dynamics; 1st; Simulations; Temperature; Density; Surface	100
179	Characteristics and Dynamics of Gas Hydrate Systems in the Northwestern South China Sea - Results of the Fifth Gas Hydrate Drilling Expedition	Wei, JG; Liang, JQ; Lu, JG; Zhang, W; He, YL	Marine and Petroleum Geology	2019	110		287	298	Gas Hydrate; Gas Chimney; Qiongdongnan Basin; South China Sea; Geothermal Gradient	99
180	A Comprehensive Review on the	Ljith, KP; Malagar, BRC; Singh, DN	Marine and	2019	104		270	285	Natural Gas Hydrates; Dissociation; Geohazards;	99

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	Geomechanical Properties of Gas Hydrate Bearing Sediments		Petroleum Geology						Strength; Stiffness; Geomechanical Modeling	
181	Influence of Fines Content on the Mechanical Behavior of Methane Hydrate-bearing Sediments	Hyodo, M; Wu, Y; Nakashima, K; Kajiyama, S; Nakata, Y	Journal of Geophysical Research-solid Earth	2017	122	10	7511	7524	Shear Behavior; Methane Hydrate; Fines Content; Triaxial Test; Critical State	99
182	Effect of NaCl on Methane Hydrate Formation and Dissociation in Porous Media	Chong, ZR; Chan, AHM; Babu, P; Yang, MJ; Linga, P	Journal of Natural Gas Science and Engineering	2015	27		178	189	Gas Hydrates; Methane Hydrates; Energy Recovery; Thermal Stimulation; Marine Sediments	99
183	Effect of Horizontal and Vertical Well Patterns on Methane Hydrate Dissociation Behaviors in Pilot-scale Hydrate Simulator	Feng, JC; Wang, Y; Li, XS; Li, G; Zhang, Y; Chen, ZY	Applied Energy	2015	145		69	79	Hydrate Dissociation; Vertical Well; Horizontal Well; Depressurization; Thermal Stimulation	99
184	Effects of Different Anionic Surfactants on Methane Hydrate Formation	Wang, F; Jia, ZZ; Luo, SJ; Fu, SF; Wang, L; Shi, XS; Wang, CS; Guo, RB	Chemical Engineering Science	2015	137		896	903	Methane Hydrates; Anionic Surfactants; Induction Time; Contact Angle; Hydrate Growth	99
185	Seafloor Instabilities and Sediment Deformation Processes: the Need for Integrated, Multi-disciplinary Investigations	Vanneste, M; Sultan, N; Garziglia, S; Forsberg, CF; L'Heureux, JS	Marine Geology	2014	352		183	214	Marine Geotechnics; Slope Stability; Sediment Failures; Fluid Flow; Shear Strength; Marine Geophysics; Monitoring; Excess Pore Pressure; Site Investigations	99
186	Was the Ediacaran Shuram Excursion A Globally Synchronized Early Diagenetic Event? Insights from Methane-derived Authigenic Carbonates in the Uppermost Doushantuo Formation, South China	Cui, H; Kaufman, AJ; Xiao, SH; Zhou, CM; Liu, XM	Chemical Geology	2017	450		59	80	Shuram Excursion; Authigenic Carbonate; Early Diagenesis; Ediacaran Period; Sulfate-methane Transition Zone (smtz); Anaerobic Oxidation of Methane (aom); Neoproterozoic Oxygenation Event (noe); Delta C-13 and Delta O-18 Co-variation	98
187	Mechanical Behaviors of Permafrost-associated Methane Hydrate-bearing Sediments under Different Mining Methods	Li, YH; Liu, WG; Zhu, YM; Chen, YF; Song, YC; Li, QP	Applied Energy	2016	162		1627	1632	Methane Hydrate; Depressurization; Heating; Ch4-co2 Replacement; Mechanical Stability	98
188	Sustainable Gas Production from Methane Hydrate Reservoirs by the Cyclic Depressurization Method	Konno, Y; Masuda, Y; Akamine, K; Naiki, M; Nagao, J	Energy Conversion and Management	2016	108		439	445	Gas Hydrate; Methane; Production; Depressurization; Numerical Simulation	98
189	Phase Equilibrium Modeling of Semi-clathrate Hydrates of Seven Commonly Gases in the Presence of Tbab Ionic Liquid Promoter Based on A Low Parameter Connectionist Technique	Baghban, A; Ahmadi, MA; Pouladi, B; Amanna, B	Journal of Supercritical Fluids	2015	101		184	192	Hydrate; Gas; Pressure; Support Vector Machine; Genetic Algorithm	98

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190	Geological and Geophysical Features of and Controls on Occurrence and Accumulation of Gas Hydrates in the First Offshore Gas-hydrate Production Test Region in the Shenhu Area, Northern South China Sea	Zhang, W; Liang, JQ; Wei, JG; Lu, JA; Su, PB; Lin, L; Huang, W; Guo, YQ; Deng, W; Yang, XL; Wan, ZF	Marine and Petroleum Geology	2020	114				Gas Hydrates; Logging While Drilling; Velocity and Impedance Inversion; Free Gas; Migration and Accumulation Mechanism; Gas-hydrate Production; Shenhu Area; Northern South China Sea	97
191	Engineering <i>pseudomonas Putida</i> Kt2440 for Efficient Ethylene Glycol Utilization	Franden, MA; Jayakody, LN; Li, WJ; Wagner, NJ; Cleveland, NS; Michener, WE; Hauer, B; Blank, LM; Wierckx, N; Klebensberger, J; Beckham, GT	Metabolic Engineering	2018	48		197	207	Ethylene Glycol; Pseudomonas Putida Kt2440; Glyoxylate; Glycolate; Glycolaldehyde; Metabolism	97
192	Anaerobic Oxidation of Ethane by Archaea from A Marine Hydrocarbon Seep	Chen, SC; Musat, N; Lechtenfeld, OJ; Paschke, H; Schmidt, M; Said, N; Popp, D; Calabrese, F; Stryhanyuk, H; Jaekel, U; Zhu, YG; Joye, SB; Richnow, HH; Widdel, F; Musat, F	Nature	2019	568	77 50	108	+	Semi-clathrate Hydrate; Carbon-dioxide; Phase-equilibrium; Dissociation Enthalpy; Storage; Sds; Injection; Insights; Behavior; Capture	96
193	Numerical Analysis of Experimental Studies of Methane Hydrate Dissociation Induced by Depressurization in A Sandy Porous Medium	Yin, ZY; Moridis, G; Chong, ZR; Tan, HK; Linga, P	Applied Energy	2018	230		444	459	Methane Hydrate; Depressurization; Kinetic Reaction; Sandy Porous Medium; Heterogeneous; Tough + Hydrate V1.5	96
194	Widespread Methane Seepage along the Continental Margin off Svalbard - from Bjornoya to Kongsfjorden	Mau, S; Römer, M; Torres, ME; Bussmann, I; Pape, T; Damm, E; Geprägs, P; Wintersteller, P; Hsu, CW; Loher, M; Bohrmann, G	Scientific Reports	2017	7				Storage	96
195	Pore-scale Modeling of Flow in Particle Packs Containing Grain-coating and Pore-filling Hydrates: Verification of A Kozeny-carman-based Permeability Reduction Model	Katagiri, J; Konno, Y; Yoneda, J; Tenma, N	Journal of Natural Gas Science and Engineering	2017	45		537	551	Gas Hydrate; Hydrate Morphology; Permeability Reduction; Kozeny-carman Equation; Discrete-element Method; Computational Fluid Dynamics	96
196	Absorption and Solubility Measurement of Co2 in Water-based Zno and Sio2 Nanofluids	Haghtalab, A; Mohammadi, M; Fakhroueian, Z	Fluid Phase Equilibria	2015	392		33	42	Co2 Solubility; Zno and Sio2 Nanoparticles; Water-based Nanofluids; Volumetric Static Method	96
197	Molecular Dynamics Simulation of Co2 Hydrates: Prediction of Three Phase Coexistence Line	Míguez, JM; Conde, MM; Torré, JP; Blas, FJ; Piñero, MM; Vega, C	Journal of Chemical Physics	2015	142	12			Air Bubbles; Clathrate; Conversion; Clusters; Kinetics	96
198	Semiclathrate Hydrate Process for Pre-combustion Capture of Co2 at near Ambient Temperatures	Zheng, JJ; Zhang, P; Linga, P	Applied Energy	2017	194		267	278	Gas Hydrates; Co2 Capture; Tbaif; Semiclathrate; Pre-combustion Capture; Ccs	95
199	Experimental Investigation on the Dissociation Conditions of Methane Hydrate	Sabil, KM; Nashed, O; Lal, B; Ismail, L; Japper-Jaafar, A	Journal of Chemical	2015	84		7	13	Thermodynamic Inhibitors; Methane Hydrate; Ionic Liquid; Hp Mu Dsc; Dissociation Enthalpy	95

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	in the Presence of Imidazolium-based Ionic Liquids		Thermodynamics							
200	Modeling the Fate of Methane Hydrates under Global Warming	Kretschmer, K; Biastoch, A; Ruepke, L; Burwicz, E	Global Biogeochemical Cycles	2015	29	5	610	625	Climate Change; Gas Hydrates; Methane; Global Estimates	95
201	The Response of Temperature and Pressure of Hydrate Reservoirs in the First Gas Hydrate Production Test in South China Sea	Qin, XW; Liang, QY; Ye, JL; Yang, L; Qiu, HJ; Xie, WW; Liang, JQ; Lu, JA; Lu, C; Lu, HL; Ma, BJ; Kuang, ZG; Wei, JG; Lu, HF; Kou, BB	Applied Energy	2020	278				Marine Gas Hydrate; Temperature Response; Pore Pressure Response; Depressurization Production; Secondary Hydrate	94
202	Interfacial Gas Enrichment at Hydrophobic Surfaces and the Origin of Promotion of Gas Hydrate Formation by Hydrophobic Solid Particles	Nguyen, NN; Nguyen, AV; Steel, KM; Dang, LX; Galib, M	Journal of Physical Chemistry C	2017	121	7	3830	3840	Hydrogen-storage; Formation Kinetics; Pure H-2; Clathrate; Tetrahydrofuran; Dynamics; Methane; Growth; Clusters; Efficient	94
203	New Porous Water Ice Metastable at Atmospheric Pressure Obtained by Emptying A Hydrogen-filled Ice	del Rosso, L; Celli, M; Ulivi, L	Nature Communications	2016	7				Electron-spin-resonance; Absorption Cross-sections; Total-energy Calculations; Free-radicals; Liquid Water; Multiphoton Ionization; Molecular-dynamics; Hydrogen-transfer; Vuv Spectroscopy; Laser Photolysis	94
204	Hydraulic Fracturing in Methane-hydrate-bearing Sand	Konno, Y; Jin, Y; Yoneda, J; Uchiumi, T; Shinjou, K; Nagao, J	Rsc Advances	2016	6	77	73148	73155	Desalination	94
205	Lithological Features of Hydrate-bearing Sediments and Their Relationship with Gas Hydrate Saturation in the Eastern Nankai Trough, Japan	Ito, T; Komatsu, Y; Fujii, T; Suzuki, K; Egawa, K; Nakatsuka, Y; Konno, Y; Yoneda, J; Jin, Y; Kida, M; Nagao, J; Minagawa, H	Marine and Petroleum Geology	2015	66		368	378	Nankai Trough; Gas Hydrate Saturation; Grain Size; Geometric Parameters; Lithology; Sediment Core; Depositional Process	94
206	A Global Survey of Gas Hydrate Development and Reserves: Specifically in the Marine Field	Lu, SM	Renewable & Sustainable Energy Reviews	2015	41		884	900	Gas Hydrate; Methane Hydrate; Exploitation and Planning; Reserve	94
207	Analysis of Depressurization Mode on Gas Recovery from Methane Hydrate Deposits and the Concomitant Ice Generation	Wang, B; Fan, Z; Wang, PF; Liu, Y; Zhao, JF; Song, YC	Applied Energy	2018	227		624	633	Natural Gas Hydrates; Depressurization; Production Pressure; Ice Generation; Heat Transfer	93
208	Paving the Way for Methane Hydrate Formation on Metal-organic Frameworks (mofs)	Casco, ME; Rey, F; Jordá, JL; Rudic, S; Fauth, F; Martínez-Escandell, M; Rodríguez-Reinoso, F; Ramos-Fernández, EV; Silvestre-Albero, J	Chemical Science	2016	7	6	3658	3666	Aqueous-solutions; Carbon-dioxide; Dissociation Conditions; Ethylene-glycol; Clathrate Hydrate; Hydrogen-sulfide; Phase-equilibria; Methane; Ethane; Water	93
209	Pcats Triaxial: A New Geotechnical Apparatus for Characterizing Pressure Cores	Priest, JA; Druce, M; Roberts, J; Schultheiss, P; Nakatsuka, Y; Suzuki,	Marine and Petroleum	2015	66		460	470	Methane Hydrate; Nankai Trough; Pressure Cores; Wave Velocity; Soil Strength;	93

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	from the Nankai Trough, Japan	K	Geology						Permeability; Triaxial Testing	
210	An Experimental Study on Gas Production from Fracture-filled Hydrate by Co ₂ and Co ₂ n ₂ Replacement	Li, B; Xu, TF; Zhang, GB; Guo, W; Liu, HN; Wang, QW; Qu, LL; Sun, YH	Energy Conversion and Management	2018	165		738	747	Fracture-filled Hydrate; Gas Replacement; Gas Recovery; Gas Sequestration; Co ₂ /n ₂ ; Qilian Mountain Permafrost	92
211	Co ₂ Hydrate Formation Promoted by A Natural Amino Acid L-methionine for Possible Application to Co ₂ Capture and Storage	Cai, YH; Chen, YL; Li, QJ; Li, L; Huang, HX; Wang, SY; Wang, WX	Energy Technology	2017	5	8	1195	1199	Amino Acid; Co ₂ Capture and Storage; Co ₂ Hydrate; Methionine; Promoter	92
212	Mechanical Experiments and Constitutive Model of Natural Gas Hydrate Reservoirs	Yan, CL; Cheng, YF; Li, ML; Han, ZY; Zhang, HW; Li, QC; Teng, F; Ding, JP	International Journal of Hydrogen Energy	2017	42	31	19810	19818	Natural Gas Hydrate; Constitutive Model; Experiment; Hydrate Saturation	92
213	Perturbation of the Carbon Cycle during the Late Pliensbachian - Early Toarcian: New Insight from High-resolution Carbon Isotope Records in Morocco	Bodin, S; Krencker, FN; Kothe, T; Hoffmann, R; Mattioli, E; Heimhofer, U; Kabiri, L	Journal of African Earth Sciences	2016	116		89	104	Carbonate Mud Shedding; Organic and Carbonate Carbon Isotopes; Early Jurassic; Methane Hydrate; Carbonate Platform Demise	92
214	Ice-sheet-driven Methane Storage and Release in the Arctic	Portnov, A; Vadakkepuliambatta, S; Mienert, J; Hubbard, A	Nature Communications	2016	7				Magnetic-resonance; Evolution	92
215	Review on Co ₂ Hydrate Formation/dissociation and Its Cold Energy Application	Sun, Q; Kang, YT	Renewable & Sustainable Energy Reviews	2016	62		478	494	Additives; Co ₂ Hydrate; Cold Energy Application; Dissociation Rate; Formation Rate; Kinetic Model	92
216	Formation of Methane Nano-bubbles during Hydrate Decomposition and Their Effect on Hydrate Growth	Bagherzadeh, SA; Alavi, S; Ripmeester, J; Englezos, P	Journal of Chemical Physics	2015	142	21			Rheological Properties; N-isopropylacrylamide; Oil-recovery; Temperature; Surfactant; Polymers; Behavior	92
217	High Pressure Rheology of Hydrate Slurries Formed from Water-in-mineral Oil Emulsions	Webb, EB; Koh, CA; Liberatore, MW	Industrial & Engineering Chemistry Research	2014	53	17	6998	7007	Water-soluble Polymers; Gas Hydrate; Antifreeze Proteins; Mechanism	92
218	Amino Acids as Kinetic Promoters for Gas Hydrate Applications: A Mini Review	Bhattacharjee, G; Linga, P	Energy & Fuels	2021	35	9	7553	7571	Particle Mesh Ewald; Methane Hydrate; Gas Hydrate; Phase-stability; Sodium-halides; Transitions; Kinetics	91
219	Carbon Dioxide Hydrate Formation with Sds: Further Insights into Mechanism of Gas Hydrate Growth in the Presence of Surfactant	Molokitina, NS; Nesterov, AN; Podenko, LS; Reshetnikov, AM	Fuel	2019	235		1400	1411	Gas Hydrate; Co ₂ Hydrate; Surfactant; Nucleation; Growth Mechanism	91
220	Archie's Saturation Exponent for Natural Gas Hydrate in Coarse-grained Reservoirs	Cook, AE; Waite, WF	Journal of Geophysical Research-solid Earth	2018	123	3	2069	2089	Gas Hydrate; Resistivity; Velocity; Hydrate Saturation; Mallik; Gulf of Mexico	91

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221	Gas Hydrate Dissociation off Svalbard Induced by Isostatic Rebound Rather Than Global Warming	Wallmann, K; Riedel, M; Hong, WL; Patton, H; Hubbard, A; Pape, T; Hsu, CW; Schmidt, C; Johnson, JE; Torres, ME; Andreassen, K; Berndt, C; Bohrmann, G	Nature Communications	2018	9				Gas Hydrate; Salt Removal; Desalination; Temperature; Energy; Phase; Efficiency; Capacity; Cations; Copper	91
222	A Study on the Influence of Nanofluids on Gas Hydrate Formation Kinetics and Their Potential: Application to the Co2 Capture Process	Said, S; Govindaraj, V; Herri, JM; Ouabbas, Y; Khodja, M; Belloum, M; Sangwai, JS; Nagarajan, R	Journal of Natural Gas Science and Engineering	2016	32		95	108	Gas Hydrates; Nanoparticles; Kinetics; Co2	91
223	Overview: Nucleation of Clathrate Hydrates	Warrier, P; Khan, MN; Srivastava, V; Maupin, CM; Koh, CA	Journal of Chemical Physics	2016	145	21			Clathrate Hydrate; Aqueous-solutions; Carbon-dioxide; Dissociation Conditions; Polymeric Inhibitors; Surface-tension; Induction Time; Co2 Capture; Methane; Technology	91
224	Metal-organic Framework Hkust-1 Promotes Methane Hydrate Formation for Improved Gas Storage Capacity	Denning, S; Majid, AAA; Lucero, JM; Crawford, JM; Carreon, MA; Koh, CA	Acs Applied Materials & Interfaces	2020	12	47	5351 0	5351 8	Gas Hydrates; Metal Organic Framework; Hkust-1; Methane; Gas Storage	90
225	the Status of Exploitation Techniques of Natural Gas Hydrate	Yang, L; Liu, YL; Zhang, HQ; Xiao, B; Guo, XW; Wei, RP; Xu, L; Sun, LJ; Yu, B; Leng, SD; Li, YH	Chinese Journal of Chemical Engineering	2019	27	9	2133	2147	Natural Gas Hydrate; Production Technique; Depressurization; Thermal Stimulation; Co2 Exchange	90
226	Pilot-scale Experimental Evaluation of Gas Recovery from Methane Hydrate Using Cycling-depressurization Scheme	Wang, Y; Feng, JC; Li, XS; Zhan, L; Li, XY	Energy	2018	160		835	844	Hydrate Decomposition; Cycling-depressurization; Pilot-scale; Experiment; Heat Transfer	90
227	Flue Gas Injection into Gas Hydrate Reservoirs for Methane Recovery and Carbon Dioxide Sequestration	Yang, JH; Okwananke, A; Tohidi, B; Chuvilin, E; Maerle, K; Istomin, V; Bukhanov, B; Cheremisin, A	Energy Conversion and Management	2017	136		431	438	Hydrate; Methane; Carbon Dioxide; Flue Gas; Methane Recovery; Carbon Dioxide Sequestration	90
228	Characterizing Mass-transfer Mechanism during Gas Hydrate Formation from Water Droplets	Liang, HY; Guan, DW; Shi, KJ; Yang, L; Zhang, LX; Zhao, JF; Song, YC	Chemical Engineering Journal	2022	428				Gas Hydrate; Formation Kinetics; Interstitial Diffusion; Effective Diffusion Coefficient; X-ray Computed Tomography	89
229	Numerical Analysis of Experimental Studies of Methane Hydrate Formation in A Sandy Porous Medium	Yin, ZY; Moridis, G; Tan, HK; Linga, P	Applied Energy	2018	220		681	704	Methane Hydrate; Hydrate Formation; Kinetic Reaction; Porous Medium; Numerical Modelling; Tough + Hydrate V1.5; Heterogeneous	89
230	Methane Hydrate Phase Equilibria for Systems Containing Nacl, Kcl, and Nh4cl	Cha, MJ; Hu, Y; Sum, AK	Fluid Phase Equilibria	2016	413		2	9	Gas Hydrates; Phase Equilibria; Hydrate Inhibition; Salt	89
231	A Water Column Study of Methane around Gas Flares Located at the West Spitsbergen Continental Margin	Gentz, T; Damm, E; von Deimling, JS; Mau, S; McGinnis, DF; Schlüter, M	Continental Shelf Research	2014	72		107	118	Methane Pathways; Gas Bubbles; under Water Mass Spectrometry; Oxidation Rates; Isotopic Ratio; Gas Hydrate	89
232	The Water Abundance in Jupiter's Equatorial Zone	Li, C; Ingersoll, A; Bolton, S; Levin, S; Janssen, M; Atreya, S; Lunine, J;	Nature Astronomy	2020	4	6	609	+	Preservation; Exploitation; Injection	88

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		Steffes, P; Brown, S; Guillot, T; Allison, M; Arballo, J; Bellotti, A; Adumitroaie, V; Gulkis, S; Hodges, A; Li, LM; Misra, S; Orton, G; Oyafuso, F; Santos-Costa, D; Waite, H; Zhang, ZM								
233	Critical Review on Gas Hydrate Formation at Solid Surfaces and in Confined Spaces-why and How Does Interfacial Regime Matter?	Nguyen, NN; Galib, M; Nguyen, AV	Energy & Fuels	2020	34	6	6751	6760	Progress; Raman; Salt; Uv	88
234	Hydrate-based Co2Capture and Ch4 Purification from Simulated Biogas with Synergic Additives Based on Gas Solvent	Xia, ZM; Li, XS; Chen, ZY; Li, G; Yan, KF; Xu, CG; Lv, QN; Cai, J	Applied Energy	2016	162		1153	1159	Biogas; Purification; Gas Hydrate; Gas Solvent; Synergic Additive	88
235	Kinetics of Methane Hydrate Formation in An Aqueous Solution of Thermodynamic Promoters (thf and Tbab) with and without Kinetic Promoter (sds)	Mech, D; Gupta, P; Sangwai, JS	Journal of Natural Gas Science and Engineering	2016	35		1519	1534	Kinetics; Methane Hydrate; Sodium Dodecyl Sulphate; Tetrahydrofuran; Tetra-n-butyl Ammonium Bromide	88
236	Microcanonical Molecular Simulations of Methane Hydrate Nucleation and Growth: Evidence That Direct Nucleation to Si Hydrate Is Among the Multiple Nucleation Pathways	Zhang, ZC; Walsh, MR; Guo, GJ	Physical Chemistry Chemical Physics	2015	17	14	8870	8876	Nan	88
237	Methane Hydrate Formation in A Test Sediment of Sand and Clay at Various Levels of Water Saturation	Kumar, A; Sakpal, T; Roy, S; Kumar, R	Canadian Journal of Chemistry	2015	93	8	874	881	Methane Hydrate; Silica Sand; Clay; Water Saturation; Formation Kinetics	88
238	Thermal Desorption of Circumstellar and Cometary Ice Analogs	Martín-Doménech, R; Caro, GMM; Bueno, J; Goesmann, F	Astronomy & Astrophysics	2014	564				Ism: Molecules; Circumstellar Matter; Comets: General; Methods: Laboratory: Solid State; Techniques: Spectroscopic	88
239	"Self-preservation" of Ch4 Hydrates for Gas Transport Technology: Pressure-temperature Dependence and Ice Microstructures	Falenty, A; Kuhs, WF; Glockzin, M; Rehder, G	Energy & Fuels	2014	28	10	6275	6283	Nan	88
240	Research Progress and Challenges in Hydrate-based Carbon Dioxide Capture Applications	Wang, XL; Zhang, FY; Lipinski, W	Applied Energy	2020	269				Hydrate-based Co2 Capture; Co2 Hydrate Structure; Thermodynamics; Formation Kinetics	87
241	Pluto's Ocean Is Capped and Insulated by Gas Hydrates	Kamata, S; Nimmo, F; Sekine, Y; Kuramoto, K; Noguchi, N; Kimura, J; Tani, A	Nature Geoscience	2019	12	6	407	+	Natural-gas Hydrate; Bearing Sediments; Methane Hydrate; Shenhu Area; Depressurization; Enhancement; Stability; Energy; Water; Site	87
242	Inhibition Effect of Amino Acids on Carbon Dioxide Hydrate	Bavoh, CB; Partoon, B; Lal, B; Gonfa, G; Khor, SF; Sharif, AM	Chemical Engineering	2017	171		331	339	Gas Hydrate; Carbon Dioxide; Phase Boundary Predictions; Cosmo-rs; Amino Acids	87

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			Science							
243	A Constitutive Mechanical Model for Gas Hydrate Bearing Sediments Incorporating Inelastic Mechanisms	Sánchez, M; Gai, XR; Santamarina, JC	Computers and Geotechnics	2017	84		28	46	Methane Hydrate; Geomechanical Behavior; Damage; Elastoplasticity; Model Application	87
244	Hydrate Dissociation Induced by Depressurization in Conjunction with Warm Brine Stimulation in Cubic Hydrate Simulator with Silica Sand	Feng, JC; Wang, Y; Li, XS	Applied Energy	2016	174		181	191	Hydrate; Depressurization; Thermal Stimulation; Warm Brine; Brine Concentration	87
245	Numerical Simulation on Gas Production from Hydrate Reservoir at the 1st Offshore Test Site in the Eastern Nankai Trough	Sun, JX; Ning, FL; Zhang, L; Liu, TL; Peng, L; Liu, ZC; Li, CL; Jiang, GS	Journal of Natural Gas Science and Engineering	2016	30		64	76	Gas Hydrate; Nankai Trough; Depressurization; Numerical Simulation; Completion Interval	87
246	Effect of Depressurization Pressure on Methane Recovery from Hydrate-gas-water Bearing Sediments	Yang, MJ; Fu, Z; Zhao, YC; Jiang, LL; Zhao, JF; Song, YC	Fuel	2016	166		419	426	Natural Gas Hydrate; Depressurization; Methane Gas Recovery; Porous Media	87
247	Role of Tectonic Stress in Seepage Evolution along the Gas Hydrate-charged Vestnesa Ridge, Fram Strait	Plaza-Faverola, A; Bünz, S; Johnson, JE; Chand, S; Knies, J; Mienert, J; Franek, P	Geophysical Research Letters	2015	42	3	733	742	3-d Seismic; Hydrates; Methane Seepage; Tectonic Stress; Vestnesa Ridge; Arctic	87
248	Frequency, Magnitude and Character of Hyperthermal Events at the Onset of the Early Eocene Climatic Optimum	Lauretano, V; Littler, K; Polling, M; Zachos, JC; Lourens, LJ	Climate of the Past	2015	11	10	1313	1324	I Methane Hydrate; Sodium-chloride; Dynamics Simulations; Co2 Hydrate; Nucleation; Desalination; Water; Behavior; Future; Sequestration	87
249	Geologic Implications of Gas Hydrates in the Offshore of India: Krishna-godavari Basin, Mahanadi Basin, Andaman Sea, Kerala-konkan Basin	Kumar, P; Collett, TS; Boswell, R; Cochran, JR; Lall, M; Mazumdar, A; Ramana, MV; Ramprasad, T; Riedel, M; Sain, K; Sathe, AV; Vishwanath, K; Yadav, US	Marine and Petroleum Geology	2014	58		29	98	Gas Hydrate; Gas; Resources; India; Krishna-godavari Basin; Mahanadi Basin; Andaman Sea; Kerala-konkan Basin	87
250	Economic Evaluation of Energy Efficient Hydrate Based Desalination Utilizing Cold Energy from Liquefied Natural Gas (Lng)	Chong, ZR; He, TB; Babu, P; Zheng, JN; Linga, P	Desalination	2019	463		69	80	Gas Hydrates; Hydrate Based Desalination; Liquefied Natural Gas; Cold Energy; Economic Evaluation; Freeze Desalination	86
251	MethaneHydrate-liquid-vapour-equilibrium Phase Condition Measurements in the Presence of Natural Amino Acids	Bavoh, CB; Partoon, B; Lal, B; Keong, LK	Journal of Natural Gas Science and Engineering	2017	37		425	434	Methane; Gas Hydrates; Amino Acids; Thermodynamic Hydrate Inhibitors; Hlwve Points	86
252	Investigation into Optimization Condition of Thermal Stimulation for Hydrate Dissociation in the Sandy Reservoir	Feng, JC; Wang, Y; Li, XS; Chen, ZY; Li, G; Zhang, Y	Applied Energy	2015	154		995	1003	Hydrate; Depressurization; Thermal Stimulation; Optimization; Energy Ratio; Entropy Production	86
253	Evaluation of Co2 Removal from A Co2+	Zhong, DL; Li, Z; Lu, YY; Wang, JL;	Applied Energy	2015	158		133	141	Gas Hydrates; Shale Gas; Carbon Dioxide	86

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	Ch4Gas Mixture Using Gas Hydrate Formation in Liquid Water and Thf Solutions	Yan, J							Capture; Gas Separation; Kinetics	
254	Gas Production from A Silty Hydrate Reservoir in the South China Sea Using Hydraulic Fracturing: A Numerical Simulation	Sun, JX; Ning, FL; Liu, TL; Liu, CL; Chen, Q; Li, YL; Cao, XX; Mao, PX; Zhang, L; Jiang, GS	Energy Science & Engineering	2019	7	4	1106	1122	Horizontal Well; Hydraulic Fracturing; Natural Gas Hydrate; Production Potential; South China Sea	85
255	Geological Occurrence and Accumulation Mechanism of Natural Gas Hydrates in the Eastern Qiongdongnan Basin of the South China Sea: Insights from Site Gmgs5-w9-2018	Liang, JQ; Zhang, W; Lu, JA; Wei, JG; Kuang, ZG; He, YL	Marine Geology	2019	418				Gas Hydrate; Thermogenic Gas; Gas Chimney; Qiongdongnan Basin; South China Sea; Gmgs5	85
256	Simulated Geomechanical Responses to Marine Methane Hydrate Recovery Using Horizontal Wells in the Shenhu Area, South China Sea	Jin, GR; Lei, HW; Xu, TF; Xin, X; Yuan, YL; Xia, YL; Juo, JG	Marine and Petroleum Geology	2018	92		424	436	Natural Gas Hydrate; Thm Model; Geomechanical Response; Depressurization; Seafloor Subsidence; South China Sea	85
257	Evidence of Intense Methane Seepages from Molybdenum Enrichments in Gas Hydrate-bearing Sediments of the Northern South China Sea	Chen, F; Hu, Y; Feng, D; Zhang, X; Cheng, SH; Cao, J; Lu, HF; Chen, DF	Chemical Geology	2016	443		173	181	Cold Seep; Anaerobic Oxidation of Methane; Seepage Intensity; Molybdenum Enrichment; Hydrate; South China Sea	85
258	Experimental Study and Thermodynamic Modeling of Co2 Gas Hydrate Formation in Presence of Zinc Oxide Nanoparticles	Mohammadi, M; Haghtalab, A; Fakhroueian, Z	Journal of Chemical Thermodynamics	2016	96		24	33	Co2 Gas Hydrate; Zno Nanoparticles; Nanofluid; Thermodynamic Modeling; Gas Storage Capacity	85
259	Thermogenic Methane Injection Via Bubble Transport into the Upper Arctic Ocean from the Hydrate-charged Vestnesa Ridge, Svalbard	Smith, AJ; Mienert, J; Büinz, S; Greinert, J	Geochemistry Geophysics Geosystems	2014	15	5	1945	1959	Gas Hydrate; Global Inventory; Porous-media; Diffusivity; Clathrate; Design; China; Heat	85
260	Effect of A Jurassic Oceanic Anoxic Event on Belemnite Ecology and Evolution	Ullmann, CV; Thibault, N; Ruhl, M; Hesselbo, SP; Korte, C	Proceedings of the National Academy of Sciences of the United States of America	2014	111	28	10073	10076	Thermal-dissociation Behavior; Carbon Dioxide Replacement; Stratigraphic Test Well; Sand-bearing Hydrate; Methane Hydrate; Ch4 Recovery; Ch4-co2 Replacement; Mackenzie Delta; Flue-gas; Pilot-scale	85
261	Experimental Study on the Effect of Methane Hydrate Decomposition on Gas Phase Permeability of Clayey Sediments	Wu, ZR; Li, YH; Sun, X; Wu, P; Zheng, JA	Applied Energy	2018	230		1304	1310	Gas Hydrate Decomposition; Permeability Damage; Clay; Hydrate Saturation; Clay Swelling	84
262	Construction and Simulation of Reservoir Scale Layered Model for Production and Utilization of Methane Hydrate: the Case of	Chen, L; Feng, YC; Kogawa, T; Okajima, J; Komiya, A; Maruyama, S	Energy	2018	143		128	140	Methane Hydrate; Energy Conversion; Multi-phase Flow; Numerical Analysis; Nankai Trough	84

序号	标题	作者	期刊名	年	卷	期	开始页码	结束页码	关键词	被引频次
	Nankai Trough Japan									
263	Thermogenic Methane Release as A Cause for the Long Duration of the Petm	Frieling, J; Svensen, HH; Planke, S; Cramwinckel, MJ; Selnes, H; Sluijs, A	Proceedings of the National Academy of Sciences of the United States of America	2016	113	43	12059	12064	Carbon Cycle; Thermogenic Methane; Volcanism; Climate Change; Petm	84
264	Gas Production from Methane Hydrate: A Laboratory Simulation of the Multistage Depressurization Test in Mallik, Northwest Territories, Canada	Heeschen, KU; Abendroth, S; Priegnitz, M; Spangenberg, E; Thaler, J; Schicks, JM	Energy & Fuels	2016	30	8	6210	6219	Wave Attenuation; Bearing Sediments; Marine-sediments; Offshore Oregon; Pore; Constraints; Saturation; Extension; Acoustics; Svalbard	84
265	Research Progress on Methane Production from Natural Gas Hydrates	Xu, CG; Li, XS	Rsc Advances	2015	5	67	54672	54699	Nan	84
266	Mechanical Instability of Monocrystalline and Polycrystalline Methane Hydrates	Wu, JY; Ning, FL; Trinh, TT; Kjelstrup, S; Vlugt, TJH; He, JY; Skallerud, BH; Zhang, ZL	Nature Communications	2015	6				Phase-equilibrium Measurements; Pre-combustion Capture; Clathrate Hydrate; Carbon-dioxide; Natural-gas; Thermodynamic Stability; Molecular-hydrogen; Plus Water; Spectroscopic Identification; Tetrabutylammonium Bromide	84
267	Pockmark Formation and Evolution in Deep Water Nigeria: Rapid Hydrate Growth Versus Slow Hydrate Dissolution	Sultan, N; Bohrmann, G; Ruffine, L; Pape, T; Riboulot, V; Colliat, JL; De Prunel�, A; Dennielou, B; Garziglia, S; Himmler, T; Marsset, T; Peters, CA; Rabiou, A; Wei, J	Journal of Geophysical Research-solid Earth	2014	119	4	2679	2694	Natural-gas Production; Production Behavior; Depressurization; Decomposition; Simulation; Reservoirs; Sediment; Kinetics; Carbon; Water	84
268	Hydrogen Clathrates: Next Generation Hydrogen Storage Materials	Gupta, A; Baron, GV; Perreault, P; Lenaerts, S; Ciocarlan, RG; Cool, P; Mileo, PGM; Rogge, S; Van Speybroeck, V; Watson, G; Van der Voort, P; Houllberghs, M; Breynaert, E; Martens, J; Denayer, JFM	Energy Storage Materials	2021	41		69	107	Hydrogen Storage; Clathrates; Hydrogen Hydrates; Raman Spectroscopy; Nmr	83
269	Hydrophobic Hydration and the Effect of NaCl Salt in the Adsorption of Hydrocarbons and Surfactants on Clathrate Hydrates	Jim�nez-Angeles, F; Firoozabadi, A	Acs Central Science	2018	4	7	820	831	Methane Hydrate; Model; Sand; Flow	83
270	A Comparative Analysis of the Mechanical Behavior of Carbon Dioxide and Methane Hydrate-bearing Sediments	Hyodo, M; Li, YH; Yoneda, J; Nakata, Y; Yoshimoto, N; Kajiyama, S; Nishimura, A; Song, YC	American Mineralogist	2014	99	1	178	183	Carbon Dioxide Hydrate; Mechanical Behavior; Ch4-co2 Replacement Technology; Triaxial Tests	83
271	Structure Identification and Dissociation Enthalpy Measurements of the Co2 + N2 Hydrates for Their Application to Co2	Lee, Y; Lee, S; Lee, J; Seo, Y	Chemical Engineering Journal	2014	246		20	26	Gas Hydrate; Flue Gas; Co2 Capture; Co2 Storage; Dissociation Enthalpy	83

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	Capture and Storage									
272	Undrained Triaxial Tests on Water-saturated Methane Hydrate-bearing Clayey-silty Sediments of the South China Sea	Wang, L; Sun, X; Shen, S; Wu, P; Liu, T; Liu, WG; Zhao, JF; Li, YH	Canadian Geotechnical Journal	2021	58	3	351	366	Undrained Triaxial Tests; Water-saturated; Methane Hydrate-bearing Sediments; Clayey Silts; South China Sea	82
273	Numerical Modeling for the Mechanical Behavior of Marine Gas Hydrate-bearing Sediments during Hydrate Production by Depressurization	Sun, X; Wang, L; Luo, H; Song, YC; Li, YH	Journal of Petroleum Science and Engineering	2019	177		971	982	Natural Gas Hydrate; Constitutive Model; Fully Coupled Thmc Model; Depressurization	82
274	Permeability Anisotropy and Relative Permeability in Sediments from the National Gas Hydrate Program Expedition 02, Offshore India	Dai, S; Kim, J; Xu, Y; Waite, WF; Jang, JB; Yoneda, J; Collett, TS; Kumar, P	Marine and Petroleum Geology	2019	108		705	713	Hydrate-bearing Sediments; Permeability Anisotropy; Relative Permeability; Gas Production	82
275	A High-fidelity Benthic Stable Isotope Record of Late Cretaceous-early Eocene Climate Change and Carbon-cycling	Barnet, JSK; Littler, K; Westerhold, T; Kroon, D; Leng, MJ; Bailey, I; Röhl, U; Zachos, JC	Paleoceanography and Paleoclimatology	2019	34	4	672	691	Authigenic Carbonates; Fluid Sources; Ocean Temperature; Continental-slope; Cold-seep; Isotope; Constraints; Expulsion; Insights; Floor	82
276	Numerical Analysis of Gas Production from Layered Methane Hydrate Reservoirs by Depressurization	Feng, YC; Chen, L; Suzuki, A; Kogawa, T; Okajima, J; Komiyama, A; Maruyama, S	Energy	2019	166		1106	1119	Methane Hydrate; Layered Structure; Depressurization; Gas Production	82
277	Strength Estimation for Hydrate-bearing Sediments from Direct Shear Tests of Hydrate-bearing Sand and Silt	Liu, ZC; Dai, S; Ning, FL; Peng, L; Wei, HZ; Wei, CF	Geophysical Research Letters	2018	45	2	715	723	Methane Hydrate; Natural-gas; Shenhu Area; Depressurization; Sediment; Deposits; Water	82
278	Laboratory Investigation into the Formation and Dissociation Process of Gas Hydrate by Low-field Nmr Technique	Ge, XM; Liu, JY; Fan, YR; Xing, DH; Deng, SG; Cai, JC	Journal of Geophysical Research-solid Earth	2018	123	5	3339	3346	Gas Hydrate; Low Field Nmr; T2 Spectrum; Formation and Dissociation	82
279	Thermodynamic Effect of Ammonium Based Ionic Liquids on Co2 Hydrates Phase Boundary	Khan, MS; Bavoh, CB; Partoon, B; Lal, B; Bustam, MA; Shariff, AM	Journal of Molecular Liquids	2017	238		533	539	Co2 Hydrate; Ammonium Based Ionic Liquids; Phase Equilibrium; Thi	82
280	Gas Recovery from Depressurized Methane Hydrate Deposits with Different Water Saturations	Yang, MJ; Fu, Z; Jiang, LL; Song, YC	Applied Energy	2017	187		180	188	Methane Hydrate; Depressurization; Excess Water; Excess Gas	82
281	Surfactant Effect on the Kinetics of Mixed Hydrogen/propane Hydrate Formation for Hydrogen Storage as Clathrates	Veluswamy, HP; Chen, JY; Linga, P	Chemical Engineering Science	2015	126		488	499	Gas Hydrates; Hydrogen Hydrate; Surfactant; Kinetics; Hydrogen Storage	82
282	Accurate and Efficient Quantum Chemistry Calculations for Noncovalent Interactions in Many-body Systems: the Xsapt Family of Methods	Lao, KU; Herbert, JM	Journal of Physical Chemistry A	2015	119	2	235	252	Natural-gas Hydrate; Induced-polarization; Methane Hydrate; Shenhu Area; Pore Habit; Resistivity; Permeability; Samples; Model; Morphology	82

序号	标题	作者	期刊名	年	卷	期	开始页码	结束页码	关键词	被引频次
283	Effect of Silica Sand Size on the Formation Kinetics of Co ₂ Hydrate in Porous Media in the Presence of Pure Water and Seawater Relevant for Co ₂ Sequestration	Mekala, P; Busch, M; Mech, D; Patel, RS; Sangwai, JS	Journal of Petroleum Science and Engineering	2014	122		1	9	Co ₂ Hydrate; Carbon Sequestration; Formation Kinetics; Seawater; Silica Sand	82
284	Experimental Study on Characteristics of Methane Hydrate Formation and Dissociation in Porous Medium with Different Particle Sizes Using Depressurization	Zhan, L; Wang, Y; Li, XS	Fuel	2018	230		37	44	Methane Hydrate; Depressurization; Sandy Sediment; Deformation; Particle Size	81
285	Influence of Tetramethylammonium Hydroxide on Methane and Carbon Dioxide Gas Hydrate Phase Equilibrium Conditions	Khan, MS; Partoon, B; Bavoh, CB; Lal, B; Mellon, NB	Fluid Phase Equilibria	2017	440		1	8	Ammonium Based Ionic Liquids; Cosmo-rs; Gas Hydrate; Inhibitor; Phase Equilibrium; Tmaoh	81
286	Molecular Insights into the Nucleation and Growth of Ch ₄ and Co ₂ Mixed Hydrates from Microsecond Simulations	He, ZJ; Gupta, KM; Linga, P; Jiang, JW	Journal of Physical Chemistry C	2016	120	44	2522 5	2523 6	Intrinsic Rate-constant; Gas Hydrate; Decomposition Kinetics; Bearing Sediments; Activation-energy; Heat; Equilibrium; Area	81
287	the Effects of Large Igneous Provinces on the Global Carbon and Sulphur Cycles	Jones, MT; Jerram, DA; Svensen, HH; Grove, C	Palaeogeography Palaeoclimatology and Palaeoecology	2016	441		4	21	Large Igneous Provinces; Mass Extinctions; Carbon Cycle; Sulphur Cycle; Climate Change; Silicate Weathering	81
288	Methane Clathrate Hydrate Nucleation Mechanism by Advanced Molecular Simulations	Lauricella, M; Meloni, S; English, NJ; Peters, B; Ciccotti, G	Journal of Physical Chemistry C	2014	118	40	2284 7	2285 7	Gas Hydrate; Benthic Foraminifera; Cold Seeps; Carbonate Precipitation; Sulfate Reduction; Bacterial Mats; Co ₂ Emissions; Fluid-flow; Sediments; Marine	81
289	Quantitative Measurement and Mechanisms for Ch ₄ Production from Hydrates with the Injection of Liquid Co ₂	Lee, BR; Koh, CA; Sum, AK	Physical Chemistry Chemical Physics	2014	16	28	1492 2	1492 7	Methane-hydrate; Depressurization; Reservoir; Accumulations; Technology; Simulation; Efficiency	81
290	An International Code Comparison Study on Coupled Thermal, Hydrologic and Geomechanical Processes of Natural Gas Hydrate-bearing Sediments	White, MD; Kneafsey, TJ; Seol, Y; Waite, WF; Uchida, S; Lin, JS; Myshakin, EM; Gai, X; Gupta, S; Reagan, MT; Queiruga, AF; Kimoto, S	Marine and Petroleum Geology	2020	120				Natural Gas Hydrates; Numerical Simulation; Coupled Thermal-hydrological-mechanical (thm) Processes; Code Comparison; Geomechanics	80
291	Efficiency Enhancements in Methane Recovery from Natural Gas Hydrates Using Injection of Co ₂ n ₂ Gas Mixture Simulating In-situ Combustion	Tupsakhare, SS; Castaldi, MJ	Applied Energy	2019	236		825	836	Gas Hydrates; Carbon Capture; Natural Gas; Energy Recovery; Methane Hydrates; Co ₂ /n ₂	80
292	Pore-scale Visualization of Methane Hydrate-bearing Sediments with Micro-ct	Lei, L; Seol, Y; Jarvis, K	Geophysical Research Letters	2018	45	11	5417	5426	Micro-ct; Methane Hydrate; Pore-scale Visualization; Phase-contrast Ct	80
293	the Impact of Amino Acids on Methane Hydrate Phase Boundary and Formation	Bavoh, CB; Nashed, O; Khan, MS; Partoon, B; Lal, B; Sharif, AM	Journal of Chemical	2018	117		48	53	Gas Hydrate; Amino Acids; Equilibrium Phase Boundary; Kinetics; Methane	80

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	Kinetics		Thermodynamics							
294	Experimental Investigation on the Mechanical Properties of Methane Hydrate-bearing Sand Formed with Rounded Particles	Kajiyama, S; Wu, Y; Hyodo, M; Nakata, Y; Nakashima, K; Yoshimoto, N	Journal of Natural Gas Science and Engineering	2017	45		96	107	Shear Strength; Methane Hydrate; Particle Shape; Stick-slip; Bonding; Glass Beads	80
295	Postglacial Response of Arctic Ocean Gas Hydrates to Climatic Amelioration	Serov, P; Vadakkepuliambatta, S; Mienert, J; Patton, H; Portnov, A; Silyakova, A; Panieri, G; Carroll, ML; Carroll, J; Andreassen, K; Hubbard, A	Proceedings of the National Academy of Sciences of the United States of America	2017	114	24	6215	6220	Arctic Ocean; Gas Hydrate; Methane Release; Climate Change	80
296	Fluid Composition and Kinetics of the in Situ Replacement in Ch4-co2 Hydrate System	Falenty, A; Qin, J; Salamatin, AN; Yang, L; Kuhs, WF	Journal of Physical Chemistry C	2016	120	48	2715 9	2717 2	Production Test-site; Natural-gas Hydrate; Daini-atsumi Knoll; Bearing Sediments; Contact Model; Shenhu Area; China; Dissociation; Simulation; Part	80
297	Methane Hydrate Formation with Surfactants Fixed on the Surface of Polystyrene Nanospheres	Wang, F; Luo, SJ; Fu, SF; Jia, ZZ; Dai, M; Wang, CS; Guo, RB	Journal of Materials Chemistry A	2015	3	16	8316	8323	Methane Hydrate; Shenhu Area; Accumulations; Site	80
298	Compressibility, Thermal Expansion Coefficient and Heat Capacity of Ch4 and Co2 Hydrate Mixtures Using Molecular Dynamics Simulations	Ning, FL; Glavatskiy, K; Ji, Z; Kjølstrup, S; Vlugt, TJH	Physical Chemistry Chemical Physics	2015	17	4	2869	2883	Natural-gas Hydrate; Alcohol Cosurfactants; Surfactant; Water; Desalination; Dissociation; Adsorption; Nucleation; Blockage; Guest	80
299	Methane Hydrate Dissociation Using Inverted Five-spot Water Flooding Method in Cubic Hydrate Simulator	Li, G; Li, XS; Li, B; Wang, Y	Energy	2014	64		298	306	Methane Hydrate Dissociation; Porous Media; Cubic Reactor; Inverted Five-spot	80
300	Past Methane Release Events and Environmental Conditions at the Upper Continental Slope of the South China Sea: Constraints by Seep Carbonates	Han, XQ; Suess, E; Liebetrau, V; Eisenhauer, A; Huang, YY	International Journal of Earth Sciences	2014	103	7	1873	1887	Seep Carbonates; U/th Ages; Methane Release Events; O- and C-isotopes; Bottom Water Temperature Reconstruction; South China Sea	80
301	Strength Estimation for Hydrate-bearing Sediments Based on Triaxial Shearing Tests	Dong, L; Li, YL; Liao, HL; Liu, CL; Chen, Q; Hu, GW; Liu, LL; Meng, QG	Journal of Petroleum Science and Engineering	2020	184				Gas Hydrate; Triaxial Shearing Test; Failure Mechanisms; Strength Prediction; Strength Criterion	79
302	India National Gas Hydrate Program Expedition-02: Operational and Technical Summary	Kumar, P; Collett, TS; Shukla, KM; Yadav, US; Lall, MV; Vishwanath, K	Marine and Petroleum Geology	2019	108		3	38	Natural Gas Hydrates; Nghp-02; Krishna Godavari Basin; Mahanadi Basin	79
303	Effect of Pressure on Methane Recovery from Natural Gas Hydrates by	Xu, CG; Cai, J; Yu, YS; Yan, KF; Li, XS	Applied Energy	2018	217		527	536	Ch4 Hydrate; Replacement; Co2; In-situ Raman	79

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	Methane-carbon Dioxide Replacement									
304	A Review of Kinetic Hydrate Inhibitors from An Environmental Perspective	Kelland, MA	Energy & Fuels	2018	32	12	1200 1	1201 2	Gas-hydrate; Crystallization; Dissociation; Kinetics; Future; Energy	79
305	Ostwald Ripening Changes the Pore Habit and Spatial Variability of Clathrate Hydrate	Chen, XY; Espinoza, DN	Fuel	2018	214		614	622	Hydrate Pore Habit; Ostwald Ripening; Growth Rate; Heterogeneous Hydrate Saturation; Permeability; Shear Strength	79
306	Evaluation of Thermal Stimulation on Gas Production from Depressurized Methane Hydrate Deposits	Wang, B; Dong, HS; Liu, YZ; Lv, X; Liu, Y; Zhao, JF; Song, YC	Applied Energy	2018	227		710	718	Natural Gas Hydrates; Depressurization; Thermal Stimulation; Heat Flux; Warm Water Injection	79
307	Submarine Slope Failures Due to Pipe Structure Formation	Elger, J; Berndt, C; Rüpke, L; Krastel, S; Gross, F; Geissler, WH	Nature Communications	2018	9				Clathrate; Dissociation; Electronucleation; Nucleation; Kinetics; Release; Storage	79
308	Combination of Surfactants and Organic Compounds for Boosting Co2 Separation from Natural Gas by Clathrate Hydrate Formation	Ricaurte, M; Dicharry, C; Renaud, X; Torré, JP	Fuel	2014	122		206	217	Gas Hydrate; Additives; Carbon Dioxide Separation; Natural Gas; Promoters	79
309	Carbonate-hosted Methanotrophy Represents An Unrecognized Methane Sink in the Deep Sea	Marlow, JJ; Steele, JA; Ziebis, W; Thurber, AR; Levin, LA; Orphan, VJ	Nature Communications	2014	5				Carbon-dioxide	79
310	Distribution and Characters of the Mud Diapirs and Mud Volcanoes off Southwest Taiwan	Chen, SC; Hsu, SK; Wang, Y; Chung, SH; Chen, PC; Tsai, CH; Liu, CS; Lin, HS; Lee, YW	Journal of Asian Earth Sciences	2014	92		201	214	Mud Diapir; Mud Volcano; Sidescan Sonar; Gas Hydrate; Sw Taiwan	79
311	Guest-induced Symmetry Lowering of An Ionic Clathrate Material for Carbon Capture	Muromachi, S; Udachin, KA; Shin, K; Alavi, S; Moudrakovski, IL; Ohmura, R; Ripmeester, JA	Chemical Communications	2014	50	78	1147 6	1147 9	Low-field Nmr; Methane-hydrate; In-situ; Bearing Sediments; Porous-media; Water-flow; Dissociation; Prevention; Stability; Mechanism	79
312	Creeping Microstructure and Fractal Permeability Model of Natural Gas Hydrate Reservoir	Cai, JC; Xia, YX; Lu, C; Bian, H; Zou, SM	Marine and Petroleum Geology	2020	115				Hydrate Bearing Sediments; Axial Stress; Pore Scale Structure; Permeability Damage; Micro-ct; Fractal Geometry Theory	78
313	A Short Review on Natural Gas Hydrate, Kinetic Hydrate Inhibitors and Inhibitor Synergists	Ke, W; Chen, DY	Chinese Journal of Chemical Engineering	2019	27	9	2049	2061	Hydrate; Nucleation; Kinetics; Hydrate Inhibitors; Inhibition Mechanism; Inhibitor Synergist	78
314	Effect of Horizontal Wellbore on the Production Behavior from Marine Hydrate Bearing Sediment	Chong, ZR; Zhao, JZ; Chan, JHR; Yin, ZY; Linga, P	Applied Energy	2018	214		117	130	Energy Recovery; Gas Hydrates; Horizontal Well; Hydrate Bearing Sediment; Depressurization; Methane Production	78
315	Opportunities and Challenges of Gas Hydrate Policies with Consideration of Environmental Impacts	Zhao, JF; Song, YC; Lim, XL; Lam, WH	Renewable & Sustainable Energy Reviews	2017	70		875	885	Gas Hydrate; Policy; Environment Impact; Ocean Energy; Sustainable Development	78
316	Triaxial Experiments on the Mechanical Properties of Hydrate-bearing Marine	Luo, TT; Song, YC; Zhu, YM; Liu, WG; Liu, Y; Li, YH; Wu, ZR	Marine and Petroleum	2016	77		507	514	Marine Sediment; Methane Hydrate-bearing Sediments; Mechanical Properties; Cohesive	78

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	Sediments of South China Sea		Geology						Force	
317	Addressing the Co ₂ Emissions of the World's Largest Coal Producer and Consumer: Lessons from the Haishiwan Coalfield, China	Li, W; Younger, PL; Cheng, YP; Zhang, BY; Zhou, HX; Liu, QQ; Dai, T; Kong, SL; Jin, K; Yang, QL	Energy	2015	80		400	413	Ccs Model; Haishiwan Coalfield; Oil Shale; Gas Hydrate	78
318	Quantitative Kinetic Inhibitor Comparisons and Memory Effect Measurements from Hydrate Formation Probability Distributions	May, EF; Wu, R; Kelland, MA; Aman, ZM; Kozielski, KA; Hartley, PG; Maeda, N	Chemical Engineering Science	2014	107		1	12	Gas Hydrate; Nucleation; Growth; Probability Distribution; Kinetics; Inhibitor	78
319	Effect of Wellbore Design on the Production Behaviour of Methane Hydrate-bearing Sediments Induced by Depressurization	Yin, ZY; Huang, L; Linga, P	Applied Energy	2019	254				Wellbore Design; Hydrate-bearing Sediments; Energy Recovery; Depressurization; Production Behaviour; Slotted-liner	77
320	Multistage Triaxial Tests on Laboratory-formed Methane Hydrate-bearing Sediments	Choi, JH; Dai, S; Lin, JS; Seol, Y	Journal of Geophysical Research-solid Earth	2018	123	5	3347	3357	Multistage Triaxial Test; Hydrate-bearing Sediments; Shear Strength; Dilation; Stiffness	77
321	Ch 4 Hydrate Formation between Silica and Graphite Surfaces: Insights from Microsecond Molecular Dynamics Simulations	He, ZJ; Linga, P; Jiang, JW	Langmuir	2017	33	43	11956	11967	Methane Hydrate; Porous-media; Gas-production; Depressurization; China; Dissociation; Technology; Mechanisms; Evolution; Behavior	77
322	Permafrost-associated Gas Hydrate: Is It Really Approximately 1 % of the Global System?	Ruppel, C	Journal of Chemical and Engineering Data	2015	60	2	429	436	Methane Hydrate; Gas Hydrate; Nanoparticles	77
323	A Bond Contact Model for Methane Hydrate-bearing Sediments with Interparticle Cementation	Jiang, MJ; Zhu, FY; Liu, F; Utili, S	International Journal for Numerical and Analytical Methods in Geomechanics	2014	38	17	1823	1854	Methane Hydrate; Cementation; Bond Contact Model; Discrete Element Method; Biaxial Compression Tests	77
324	Kinetic Inhibition of Natural Gas Hydrates in Saline Solutions and Heptane	Sharifi, H; Ripmeester, J; Walker, VK; Englezos, P	Fuel	2014	117		109	117	Gas Hydrate; Kinetic Inhibition; Flow Assurance; Saline Solution; Liquid Hydrocarbon	77
325	Formation & Dissociation of Methane Gas Hydrates in Sediments: A Critical Review	Malagar, BRC; Lijith, KP; Singh, DN	Journal of Natural Gas Science and Engineering	2019	65		168	184	Methane Gas Hydrates; Hydrates Bearing Sediments; Laboratory Synthesis; Sediment Matrix Characteristics; Hydrate Saturation	76
326	the Use of Electrical Heating for the Enhancement of Gas Recovery from Methane Hydrate in Porous Media	Li, B; Liu, SD; Liang, YP; Liu, H	Applied Energy	2018	227		694	702	Gas Hydrate; Vertical Well; Depressurization; Thermal Stimulation; Electrical Heating	76
327	Energy Geotechnics: Advances in Subsurface Energy Recovery, Storage, Exchange, and	McCartney, JS; Sánchez, M; Tomac, I	Computers and Geotechnics	2016	75		244	256	Energy Geotechnics; Energy Waste Disposal; Energy Piles; Carbon Sequestration; Methane	76

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	Waste Management								Hydrates; Hydraulic Fracturing	
328	Drilling of Gas Hydrate Reservoirs	Merey, S	Journal of Natural Gas Science and Engineering	2016	35		1167	1179	Gas Hydrates; Lwd; Drilling; Coring; Cementing	76
329	Gas Production from Layered Methane Hydrate Reservoirs	Bhade, P; Phirani, J	Energy	2015	82		686	696	Gas Hydrates; Reservoir Simulation; Heterogeneity; Layering	76
330	Experiments and Thermodynamic Simulations for Continuous Separation of Co ₂ from Ch ₄ + Co ₂ Gas Mixture Utilizing Hydrate Formation	Tomita, S; Akatsu, S; Ohmura, R	Applied Energy	2015	146		104	110	Clathrate Hydrate; Gas Hydrate; Gas Separation; Co ₂ Capture; Natural Gas	76
331	How Properties of Solid Surfaces Modulate the Nucleation of Gas Hydrate	Bai, DS; Chen, GJ; Zhang, XR; Sum, AK; Wang, WC	Scientific Reports	2015	5				Hydrocarbon Seepage; Crude Oils; Aliphatic-hydrocarbons; Sulfate Reduction; Source-rock; Sediments; Methane; Gulf; Geochemistry; Surface	76
332	Are the Amino Acids Thermodynamic Inhibitors Or Kinetic Promoters for Carbon Dioxide Hydrates?	Prasad, PSR; Kiran, BS	Journal of Natural Gas Science and Engineering	2018	52		461	466	Carbon Dioxide Hydrates; Amino Acids; Thermodynamic Inhibitor; Kinetic Promoter; Raman Spectroscopy	75
333	A Method to Recover Natural Gas Hydrates with Geothermal Energy Conveyed by Co ₂	Liu, YG; Hou, J; Zhao, HF; Liu, XY; Xia, ZZ	Energy	2018	144		265	278	Natural Gas Hydrate; Geothermal Energy; Thermal Stimulation; Co ₂ Replacement; Heat Exchange Well	75
334	What Are the Key Factors Governing the Nucleation of Co ₂ Hydrate?	He, ZJ; Linga, P; Jiang, JW	Physical Chemistry Chemical Physics	2017	19	24	1565 7	1566 1	Nan	75
335	Effects of Cyclopentane on Co ₂ Hydrate Formation and Dissociation as A Co-guest Molecule for Desalination	Zheng, JN; Yang, MJ; Liu, Y; Wang, DY; Song, YC	Journal of Chemical Thermodynamics	2017	104		9	15	Co ₂ Hydrate; Cyclopentane; Desalination; Thermodynamic	75
336	Impact of Anaerobic Oxidation of Methane on the Geochemical Cycle of Redox-sensitive Elements at Cold-seep Sites of the Northern South China Sea	Hu, Y; Feng, D; Liang, QY; Xia, Z; Chen, LY; Chen, DF	Deep-sea Research Part Ii-topical Studies in Oceanography	2015	122		84	94	Anaerobic Oxidation of Methane (aom); Trace Element; Pore Water; Cold Seep; Northern South China Sea	75
337	Microstructure Observations of Natural Gas Hydrate Occurrence in Porous Media Using Microfocus X-ray Computed Tomography	Yang, L; Zhao, JF; Liu, WG; Li, YH; Yang, MJ; Song, YC	Energy & Fuels	2015	29	8	4835	4841	Methane Hydrate; Gas Recovery; Natural-gas; Thermal-stimulation; Supercooled Water; Freezing-point; Porous-media; Depressurization; Behavior; Permeability	75
338	Reaction Coordinate of Incipient Methane	Barnes, BC; Knott, BC; Beckham,	Journal of	2014	118	46	1323	1324	Methane Hydrate; Offshore Production; Nankai	75

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	Clathrate Hydrate Nucleation	GT; Wu, DT; Sum, AK	Physical Chemistry B				6	3	Trough; Behavior	
339	Probing Methane Hydrate Nucleation through the Forward Flux Sampling Method	Bi, YF; Li, TS	Journal of Physical Chemistry B	2014	118	47	13324	13332	Butyl Phosphonium Bromide; Plus Carbon-dioxide; Methane Hydrate; Aqueous-solutions; Clathrate Hydrate; Co2 Hydrate; Thermodynamic Properties; Dissociation Conditions; Stability Conditions; Ethylene-glycol	75
340	Inhibition of Gas Hydrate Nucleation and Growth: Efficacy of An Antifreeze Protein from the Longhorn Beetle rhagium Mordax	Perfeldt, CM; Chua, PC; Daraboina, N; Friis, D; Kristiansen, E; Ramlov, H; Woodley, JM; Kelland, MA; von Solms, N	Energy & Fuels	2014	28	6	3666	3672	Methane Hydrate; Anomalous Preservation; Storage; Ice; Dependence; Temperature; Technology; Pressure; Rates	75
341	Optimized Gas and Water Production from Water-saturated Hydrate-bearing Sediment through Step-wise Depressurization Combined with Thermal Stimulation	Guo, XW; Xu, L; Wang, B; Sun, LJ; Liu, YL; Wei, RP; Yang, L; Zhao, JF	Applied Energy	2020	276				Natural Gas Hydrate; Water-saturated; Step-wise Depressurization; Water Production; Gas-water Ratio	74
342	Experiments on Methane Hydrates Formation in Seabed Deposits and Gas Recovery Adopting Carbon Dioxide Replacement Strategies	Rossi, F; Gambelli, AM; Sharma, DK; Castellani, B; Nicolini, A; Castaldi, MJ	Applied Thermal Engineering	2019	148		371	381	Methane Hydrates; Lab-scale Reactor; Temperature Analysis; Co2 Replacement; Carbon Capture	74
343	Surfactant for Better Tomorrow: Applied Aspect of Surfactant Aggregates from Laboratory to Industry	Sar, P; Ghosh, A; Scarso, A; Saha, B	Research on Chemical Intermediates	2019	45	12	6021	6041	Surfactant; Micelle; Drug Delivery; Pharmaceutical; Detergency; Bioremediation; Catalysis	74
344	Application of Horizontal Wells to the Oceanic Methane Hydrate Production in the Nankai Trough, Japan	Yu, T; Guan, GQ; Abudula, A; Yoshida, A; Wang, DY; Song, YC	Journal of Natural Gas Science and Engineering	2019	62		113	131	Oceanic Methane Hydrate; Nankai Trough; Horizontal Well; Depressurization; Hot Water Injection	74
345	Investigation of Salt Removal Using Cyclopentane Hydrate Formation and Washing Treatment for Seawater Desalination	Han, S; Rhee, YW; Kang, SP	Desalination	2017	404		132	137	Gas Hydrate; Cyclopentane; Washing; Seawater; Pre-treatment	74
346	Why Ice-binding Type I Antifreeze Protein Acts as A Gas Hydrate Crystal Inhibitor	Bagherzadeh, SA; Alavi, S; Ripmeester, JA; Englezos, P	Physical Chemistry Chemical Physics	2015	17	15	9984	9990	Molecular-dynamics Simulations; Thermodynamic Stability Conditions; Natural-gas Hydrate; Carbon-dioxide; Methane Hydrate; Clathrate Hydrate; Cyclopentane Hydrate; Phase-equilibrium; Sodium-chloride; Seawater Desalination	74
347	Hydrate Plug Formation Risk with Varying Watercut and Inhibitor Concentrations	Sohn, YH; Kim, J; Shin, K; Chang, D; Seo, Y; Aman, ZM; May, EF	Chemical Engineering	2015	126		711	718	Gas Hydrates; Formation Kinetics; Watercut; Under-inhibition; Transportability	74

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			Science							
348	Synergistic Hydrate Inhibition of Monoethylene Glycol with Poly(vinylcaprolactam) in Thermodynamically Underinhibited System	Kim, J; Shin, K; Seo, Y; Cho, SJ; Lee, JD	Journal of Physical Chemistry B	2014	118	30	9065	9075	Gas-hydrate; Water; Palygorskite; Optimization	74
349	Rapid and High Capacity Methane Storage in Clathrate Hydrates Using Surfactant Dry Solution	Fan, SS; Yang, L; Wang, YH; Lang, XM; Wen, YG; Lou, X	Chemical Engineering Science	2014	106		53	59	Surfactant; Dry Solution; Methane Hydrate; Formation Kinetics	74
350	Numerical Simulation of the Short- and Long-term Production Behavior of the First Offshore Gas Hydrate Production Test in the South China Sea	Sun, YH; Ma, XL; Guo, W; Jia, R; Li, B	Journal of Petroleum Science and Engineering	2019	181				the Shenhu Area; Gas Hydrates; Production Behavior; Hydrate Reformation; Numerical Simulation	73
351	Hydraulic Fracturing in A Penny-shaped Crack. Part II: Testing the Frackability of Methane Hydrate-bearing Sand	Too, JL; Cheng, A; Khoo, BC; Palmer, A; Linga, P	Journal of Natural Gas Science and Engineering	2018	52		619	628	Methane Hydrate; Hydraulic Fracturing; Apparent Fracture Toughness; Tensile Strength; Gas Hydrates	73
352	Promoting Effect of Al ₂ O ₃ /zno-based Nanofluids Stabilized by Sds Surfactant on CH ₄ +C ₂ H ₆ +C ₃ H ₈ Hydrate Formation	Kakati, H; Mandal, A; Laik, S	Journal of Industrial and Engineering Chemistry	2016	35		357	368	Gas Hydrate; Induction Time; Formation Rate; Storage Capacity; Apparent Rate Constant	73
353	Influence of Reservoir Permeability on Methane Hydrate Dissociation by Depressurization	Zhao, JF; Fan, Z; Dong, HS; Yang, Z; Song, YC	International Journal of Heat and Mass Transfer	2016	103		265	276	Methane Hydrate; Permeability; Dissociation; Gas Production; Depressurization	73
354	Prospecting for Marine Gas Hydrate Resources	Boswell, R; Shipp, C; Reichel, T; Shelander, D; Saeki, T; Frye, M; Shedd, W; Collett, TS; McConnell, DR	Interpretation-a Journal of Subsurface Characterization	2016	4	1	SA13	SA24	Sodium Dodecyl-sulfate; Kinetics; Storage; Promoters; Pellets	73
355	Kinetics of Methane Hydrate Formation in the Presence of Activated Carbon and Nano-silica Suspensions in Pure Water	Govindaraj, V; Mech, D; Pandey, G; Nagarajan, R; Sangwai, JS	Journal of Natural Gas Science and Engineering	2015	26		810	818	Activated Carbon; Clathrate Hydrates; Kinetics; Methane; Nano-silica; Suspension	73
356	Phase Equilibrium of Semiclathrate Hydrates of Methane in Aqueous Solutions of Tetra-n-butyl Ammonium Bromide (tbab) and Tbab-nacl	Sangwai, JS; Oellrich, L	Fluid Phase Equilibria	2014	367		95	102	Gas Hydrate; Methane; Semiclathrate Hydrate; Sodium Chloride; Tetra-n-butyl Ammonium Bromide	73
357	Weak Layers: Their Definition and Classification from A Geotechnical	Locat, J; Leroueil, S; Locat, A; Lee, H	Submarine Mass Movements and	2014	37		3	12	Submarine Landslides; Weak Layers; Strength; Strain Softening; Sedimentology; Geotechnical	73

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	Perspective		Their Consequences: 6th International Symposium						Properties; Surface of Rupture; Earthquake; Gas Hydrates	
358	India National Gas Hydrate Program Expedition 02 Summary of Scientific Results: Evaluation of Natural Gas-hydrate-bearing Pressure Cores	Boswell, R; Yoneda, J; Waite, WF	Marine and Petroleum Geology	2019	108		143	153	Gas Hydrates; Pressure Cores; National Gas Hydrate Program; Krishna-godavari Basin	72
359	India National Gas Hydrate Program Expedition 02 Summary of Scientific Results: Numerical Simulation of Reservoir Response to Depressurization	Boswell, R; Myshakin, E; Moridis, G; Konno, Y; Collett, TS; Reagan, M; Ajayi, T; Seol, Y	Marine and Petroleum Geology	2019	108		154	166	Gas Hydrates; Geological Models; Numerical Simulation; Geomechanical Modeling	72
360	Numerical Simulations of Depressurization-induced Gas Production from An Interbedded Turbidite Gas Hydrate-bearing Sedimentary Section in the Offshore India: Site Nghp-02-16 (area-b)	Myshakin, EM; Seol, Y; Lin, JS; Uchida, S; Collett, TS; Boswell, R	Marine and Petroleum Geology	2019	108		619	638	Gas Hydrates; Reservoir Simulations; Marine Gas Hydrate Deposits; India National Gas Hydrate Program	72
361	Thermodynamic Limitations of the Co ₂ /n ₂ Mixture Injected into CH ₄ Hydrate in the Ignik Sikumi Field Trial	Kvamme, B	Journal of Chemical and Engineering Data	2016	61	3	1280	1295	Gas Hydrate Formation; Aqueous-solutions; Methane Hydrate; Kaolinite; Curves	72
362	Experimental Study of Using Cu ₂ O Nanoparticles as A Methane Hydrate Promoter	Aliabadi, M; Rasoolzadeh, A; Esmailzadeh, F; Alamdari, A	Journal of Natural Gas Science and Engineering	2015	27		1518	1522	Gas Hydrates; Nanoparticles; Gas Storage and Transport; Hydrate Applications	72
363	Storage of CO ₂ in A Partially Water Saturated Porous Medium at Gas Hydrate Formation Conditions	Sun, D; Englezos, P	International Journal of Greenhouse Gas Control	2014	25		1	8	Carbon Dioxide Storage; Depleted Gas Reservoir; Hydrate; Sequestration; Gas Injection	72
364	New Approach for Determining the Reaction Rate Constant of Hydrate Formation via X-ray Computed Tomography	Liang, HY; Yang, L; Song, YC; Zhao, JF	Journal of Physical Chemistry C	2021	125	1	42	48	Water; Nucleation; Emulsions; Enthalpy; Growth	71
365	Sand Production Evaluation during Gas Production from Natural Gas Hydrates	Yan, CL; Li, Y; Cheng, YF; Wang, W; Song, BJ; Deng, FC; Feng, YC	Journal of Natural Gas Science and Engineering	2018	57		77	88	Natural Gas Hydrate; Multifield Coupling; Sand Production; Hydrate Saturation; Hydrate Dissociation	71
366	Experimental Determination of Hydrate Phase Equilibrium for Different Gas Mixtures Containing Methane, Carbon	Sadeq, D; Iglauer, S; Lebedev, M; Smith, C; Barifcani, A	Journal of Natural Gas Science and	2017	38		59	73	Gas Hydrates; Equilibrium Conditions; Methane; Nitrogen; Carbon Dioxide; Motor Current Measurements	71

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	Dioxide and Nitrogen with Motor Current Measurements		Engineering							
367	Experimental and Modeling Analyses of Scaling Criteria for Methane Hydrate Dissociation in Sediment by Depressurization	Wang, Y; Feng, JC; Li, XS; Zhang, Y	Applied Energy	2016	181		299	309	Hydrate Dissociation; Scaling Criterion; Depressurization; Different Scales; Experiment	71
368	Experimental Research on the Mechanical Properties of Methane Hydrate-bearing Sediments during Hydrate Dissociation	Song, YC; Zhu, YM; Liu, WG; Zhao, JF; Li, YH; Chen, YF; Shen, ZT; Lu, Y; Ji, CM	Marine and Petroleum Geology	2014	51		70	78	Methane Hydrate-bearing Sediments; Hydrate Dissociation; Mechanical Properties; Mohr-coulomb Criterion	71
369	A Microfocus X-ray Computed Tomography Based Gas Hydrate Triaxial Testing Apparatus	Li, YH; Wu, P; Liu, WG; Sun, X; Cui, Z; Song, YC	Review of Scientific Instruments	2019	90	5			Carbon-dioxide; Pool Fire; Dissociation; Enthalpies	70
370	the Mathematical Model of the Gas Hydrate Deposit Development in Permafrost	Musakaev, NG; Khasanov, MK; Borodin, SL	International Journal of Heat and Mass Transfer	2018	118		455	461	Gas Hydrates; Porous Medium; Filtration; Methane; Hydrate Dissociation	70
371	Enhanced Methane Hydrate Formation with Cyclopentane Hydrate Seeds	Baek, S; Ahn, YH; Zhang, JS; Min, J; Lee, H; Lee, JW	Applied Energy	2017	202		32	41	Methane Storage; Methane Hydrates; Cyclopentane Hydrates; Hydrate Seed Crystals; Enclathration Kinetics	70
372	Hydrate Growth at the Interface between Water and Pure Or Mixed Co2/ch4 Gases: Influence of Pressure, Temperature, Gas Composition and Water-soluble Surfactants	Daniel-David, D; Guerton, F; Dicharry, C; Torré, JP; Broseta, D	Chemical Engineering Science	2015	132		118	127	Co2/ch4 Hydrates; Hydrate Growth; Hydrate Promoters; Surfactants	70
373	Enhanced Carbon Dioxide Hydrate Formation Kinetics in A Fixed Bed Reactor Filled with Metallic Packing	Kumar, A; Sakpal, T; Linga, P; Kumar, R	Chemical Engineering Science	2015	122		78	85	Gas Hydrate; Carbon Dioxide; Kinetics; Packed Bed; Sodium Dodecyl Sulfate	70
374	Feasibility Evaluation of Hydraulic Fracturing in Hydrate-bearing Sediments Based on Analytic Hierarchy Process-entropy Method (ahp-em)	Liu, XQ; Zhang, WD; Qu, ZQ; Guo, TK; Sun, Y; Rabiei, M; Cao, QY	Journal of Natural Gas Science and Engineering	2020	81				Hydrate-bearing Sediments; Hydraulic Fracturing; Fracability Index; Analytic Hierarchy Process-entropy Method; Fracability Evaluation Model	69
375	Comprehensive Review on Exploration and Drilling Techniques for Natural Gas Hydrate Reservoirs	Sahu, C; Kumar, R; Sangwai, JS	Energy & Fuels	2020	34	10	11813	11839	Methane Hydrate; Bearing Sediments; Identification; Corrosion; Gromacs; Water; Ice	69
376	Gas Recovery Enhancement from Methane Hydrate Reservoir in the Nankai Trough Using Vertical Wells	Yu, T; Guan, GQ; Abudula, A; Yoshida, A; Wang, DY; Song, YC	Energy	2019	166		834	844	Oceanic Methane Hydrate; Depressurization; Single-vertical-well System; Dual-vertical-well System; Gas Recovery Enhancement	69
377	Natural Gas Hydrate Exploitation by Co2/h2 Continuous Injection-production Mode	Sun, YF; Zhong, JR; Li, R; Zhu, T; Cao, XY; Chen, GJ; Wang, XH; Yang, LY; Sun, CY	Applied Energy	2018	226		10	21	Hydrate; Co2/ch4 Replacement; Co2/h-2 Injection; Co2 Sequestration; Continuous Injection-production	69

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378	Clathrate Hydrates of Greenhouse Gases in the Presence of Natural Amino Acids: Storage, Transportation and Separation Applications	Prasad, PSR; Kiran, BS	Scientific Reports	2018	8				Semi-clathrate Hydrate; Methane Hydrate; Co ₂ Hydrate; Phase-equilibrium; Cold-storage; Flue-gas; Kinetics; Water; Dioxide; Temperature	69
379	Downhole Log Evidence for the Coexistence of Structure I Gas Hydrate and Free Gas below the Bottom Simulating Reflector in the South China Sea	Qian, J; Wang, XJ; Collett, TS; Guo, YQ; Kang, DJ; Jin, JP	Marine and Petroleum Geology	2018	98		662	674	Structure I Gas Hydrate; Free Gas; Saturation; Interbedded; Coexistence	69
380	Minimal Geological Methane Emissions during the Younger Dryas-preboreal Abrupt Warming Event	Petrenko, VV; Mith, AMS; Chaefer, HS; Riedel, K; Brook, E; Baggenstos, D; Harth, C; Hua, Q; Buizert, C; Schilt, A; Fain, X; Mitchell, L; Bauska, T; Orsi, A; Weiss, RF; Everinghaus, JPS	Nature	2017	548	76 68	443	446	Plus Carbon-dioxide; Pre-combustion Capture; Van-der-waals; Phase-equilibria; Dissociation Conditions; Liquid Water; Molecular-dynamics; Aqueous-solutions; Storage Capacity; Next-generation	69
381	Experimental Investigation of Optimization of Well Spacing for Gas Recovery from Methane Hydrate Reservoir in Sandy Sediment by Heat Stimulation	Wang, Y; Feng, JC; Li, XS; Zhang, Y	Applied Energy	2017	207		562	572	Hydrate Dissociation; Heat Stimulation; Well Spacing; Experiment; Optimization	69
382	An Integrated View of the Methane System in the Pockmarks at Vestnesa Ridge, 79°n	Panieri, G; Bünz, S; Fornari, DJ; Escartin, J; Serov, P; Jansson, P; Torres, ME; Johnson, JE; Hong, WL; Sauer, S; Garcia, R; Gracias, N	Marine Geology	2017	390		282	300	Fluid Expulsions; Methane; Pockmarks; Gas Flares; Seeps; Gas Hydrate; Photomosaicing; Carbonate Concretions; Chemosynthetic Organisms; Vestnesa; Arctic Ocean	69
383	An Easy and Efficient Way to Evaluate Mechanical Properties of Gas Hydrate-bearing Sediments: the Direct Shear Test	Liu, ZC; Wei, HZ; Peng, L; Wei, CF; Ning, FL	Journal of Petroleum Science and Engineering	2017	149		56	64	Gas Hydrate; Co ₂ ; Direct Shear; Sediment; Mechanical Property	69
384	Kinetic Study of Methane Hydrate Formation in the Presence of Copper Nanoparticles and Ctab	Pahlavanzadeh, H; Rezaei, S; Khanlarkhani, M; Manteghian, M; Mohammadi, AH	Journal of Natural Gas Science and Engineering	2016	34		803	810	Clathrate Hydrate; CH ₄ Gas Hydrate; Ctab; Copper Nanoparticles; Kinetics	69
385	Observations of Pore-scale Growth Patterns of Carbon Dioxide Hydrate Using X-ray Computed Microtomography	Ta, XH; Yun, TS; Muhunthan, B; Kwon, TH	Geochemistry Geophysics Geosystems	2015	16	3	912	924	Gas Hydrate; X-ray Ct; Nucleation; Crystal Growth	69
386	Hydrate-bearing Sediment of the South China Sea: Microstructure and Mechanical Characteristics	Wu, P; Li, YH; Wang, L; Sun, X; Wu, DJ; He, YF; Li, QP; Song, YC	Engineering Geology	2022	307				Gashydrate; Mechanicalcharacteristics; Hydrateoccurrence; Triaxialtest; Thesouthchinasea	68
387	Economic Impacts of Tipping Points in the Climate System	Dietz, S; Rising, J; Stoerk, T; Wagner, G	Proceedings of the National	2021	118	34			Climate Tipping Points; Social Cost of Carbon; Integrated Assessment Model; Climate Risk	68

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			Academy of Sciences of the United States of America							
388	Tuning the Fluid Production Behaviour of Hydrate-bearing Sediments by Multi-stage Depressurization	Gao, Q; Yin, ZY; Zhao, JZ; Yang, D; Linga, P	Chemical Engineering Journal	2021	406				Gas Hydrates; Hydrate-bearing Sediments; Multi-stage Depressurization; Fluid Production; Heat Transfer; Energy Efficiency Ratio	68
389	Hydrate-induced Clogging of Sand-control Screen and Its Implication on Hydrate Production Operation	Li, YL; Wu, NY; Ning, FL; Gao, DL; Hao, XL; Chen, Q; Liu, CL; Sun, JY	Energy	2020	206				Gas Hydrate; Hydrate Clogging; Sand Control; Sand-control Screen; Field Operation; Screen Plugging	68
390	Investigation on the Multiparameter of Hydrate-bearing Sands Using Nano-focus X-ray Computed Tomography	Li, CF; Liu, CL; Hu, GW; Sun, JY; Hao, XL; Liu, LL; Meng, QG	Journal of Geophysical Research-solid Earth	2019	124	3	2286	2296	Gas Hydrate; X-ct; Hydrate Saturation; Pore Distribution; Permeability	68
391	Reviews of Gas Hydrate Inhibitors in Gas-dominant Pipelines and Application of Kinetic Hydrate Inhibitors in China	Wang, YH; Fan, SS; Lang, XM	Chinese Journal of Chemical Engineering	2019	27	9	2118	2132	Gas Hydrate; Thermal Hydrate Inhibitor; Kinetic Hydrate Inhibitor; Dual-effect Inhibitor; Field Testing	68
392	Seepage from An Arctic Shallow Marine Gas Hydrate Reservoir Is Insensitive to Momentary Ocean Warming	Hong, WL; Torres, ME; Carroll, J; Cremiere, A; Panieri, G; Yao, H; Serov, P	Nature Communications	2017	8				Pressure Phase-equilibrium; Thermodynamic Stability; Hydrogen-storage; Methane Hydrate; Clathrate; Prediction; Water	68
393	Lattice Constants and Expansivities of Gas Hydrates from 10 K Up to the Stability Limit	Hansen, TC; Falenty, A; Kuhs, WF	Journal of Chemical Physics	2016	144	5			Program Expedition 02; Krishna-godavari Basin; Gas Hydrate; Log; Exploration; Velocities	68
394	Hydrate-based Removal of Carbon Dioxide and Hydrogen Sulphide from Biogas Mixtures: Experimental Investigation and Energy Evaluations	Castellani, B; Rossi, F; Filipponi, M; Nicolini, A	Biomass & Bioenergy	2014	70		330	338	Biogas Upgrading; Gas Hydrates; Hydrate-based Separation; Water Spraying; Up-scaled Apparatus	68
395	Energy and Exergy Analysis of Natural Gas Pressure Reduction Points Equipped with Solar Heat and Controllable Heaters	Farzaneh-Gord, M; Arabkoohsar, A; Dasht-bayaz, MD; Machado, L; Koury, RNN	Renewable Energy	2014	72		258	270	Solar Thermal Storage; Net Present Value; Natural Gas; Cgs Station; Exergy Destruction Rate	68
396	Enhanced Efficiency of Salt Removal from Brine for Cyclopentane Hydrates by Washing, Centrifuging, and Sweating	Han, S; Shin, JY; Rhee, YW; Kang, SP	Desalination	2014	354		17	22	Gas Hydrate; Cyclopentane; Hydrate Formation; Centrifuging; Washing; Sweating	68
397	Influence of Sodium Halides on the Kinetics of Co2 Hydrate Formation	Farhang, F; Nguyen, AV; Hampton, MA	Energy & Fuels	2014	28	2	1220	1229	Effective Thermal-conductivity; Molecular-dynamics Simulation; Methane Hydrate; Temperature Distribution; Physical-properties; Bearing Sediments; Dissociation; Clathrate; Depressurization; Sea	68

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398	Imaging Methane Hydrates Growth Dynamics in Porous Media Using Synchrotron X-ray Computed Microtomography	Kerkar, PB; Horvat, K; Jones, KW; Mahajan, D	Geochemistry Geophysics Geosystems	2014	15	12	4759	4768	Methane Hydrate; Microcomputed Tomography; Pore-scale Hydrate Growth Dynamics; Sediment Hosted Hydrates	68
399	Effect of Methane Hydrate Dissociation and Reformation on the Permeability of Clayey Sediments	Wu, ZR; Liu, WG; Zheng, JA; Li, YH	Applied Energy	2020	261				Permeability; Hydrate Dissociation; Hydrate Reformation; Clayey Sediments; South China Sea	67
400	the Effects of Compressibility of Natural Gas Hydrate-bearing Sediments on Gas Production Using Depressurization	Sun, X; Li, Y; Liu, Y; Song, YC	Energy	2019	185		837	846	Gas Production; Depressurization; Hydrate Dissociation; Compressibility	67
401	Theoretical Research of the Gas Hydrate Deposits Development Using the Injection of Carbon Dioxide	Shagapov, VS; Khasanov, MK; Musakaev, NG; Duong, NH	International Journal of Heat and Mass Transfer	2017	107		347	357	Gas Hydrates; Porous Medium; Methane; Carbon Dioxide; Replacement; Decomposition	67
402	Ch4 - Flue Gas Replacement Occurring in Sh Hydrates and Its Significance for Ch4 Recovery and Co2 Sequestration	Lee, Y; Seo, YJ; Ahn, T; Lee, J; Lee, JY; Kim, SJ; Seo, Y	Chemical Engineering Journal	2017	308		50	58	Gas Hydrate; Flue Gas; Replacement; Co2 Sequestration; Structure H; Dissociation Enthalpy	67
403	A Review on Simulation of Methane Production from Gas Hydrate Reservoirs: Molecular Dynamics Prospective	Kondori, J; Zendejboudi, S; Hossain, ME	Journal of Petroleum Science and Engineering	2017	159		754	772	Methane Hydrate Reservoir; Hydrate Dissociation; Kinetics of Decomposition; Molecular Dynamics Simulation; Potential Function	67
404	Gas Hydrate Plug Formation in Partially-dispersed Water-oil Systems	Akhfash, M; Aman, ZM; Ahn, SY; Johns, ML; May, EF	Chemical Engineering Science	2016	140		337	347	Gas Hydrates; Water-oil Emulsion; Deposition; Partial Dispersion; Hydrate Plug; Flow Assurance	67
405	Performance Evaluation of Methane Separation from Coal Mine Gas by Gas Hydrate Formation in A Stirred Reactor and in A Fixed Bed of Silica Sand	Zhong, DL; Lu, YY; Sun, DJ; Zhao, WL; Li, Z	Fuel	2015	143		586	594	Gas Hydrates; Coal Mine Gas; Methane Recovery; Gas Separation; Sds	67
406	the Return of Kinetic Hydrate Inhibitors	Tohidi, B; Anderson, R; Mozaffar, H; Tohidi, F	Energy & Fuels	2015	29	12	8254	8260	Methane Hydrate; Offshore Production; Nankai Trough; Flow; Sea	67
407	Kinetic Studies of Methane Hydrate Formation in Porous Media Based on Experiments in A Pilot-scale Hydrate Simulator and A New Model	Li, B; Li, XS; Li, G	Chemical Engineering Science	2014	105		220	230	Gas Hydrate; Kinetics; Porous Media; Simulation; Intrinsic Rate	67
408	Investigation of Using Graphite Nanofluids to Promote Methane Hydrate Formation: Application to Solidified Natural Gas Storage	Lu, YY; Ge, BB; Zhong, DL	Energy	2020	199				Gas Hydrates; Natural Gas; Sng; Methane; Graphite Nanoparticles; Gas Storage Capacity	66
409	the Effects of Hydrate on the Strength and	Madhusudhan, BN; Clayton, CRI;	Journal of	2019	124	1	65	75	Combustion Characteristics; Oil; Emission;	66

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	Stiffness of Some Sands	Priest, JA	Geophysical Research-solid Earth						Biomass; Blends; Diesel	
410	Selectivity and Co2 Capture Efficiency in Co2-n2 Clathrate Hydrates Investigated by In-situ Raman Spectroscopy	Chazallon, B; Pirim, C	Chemical Engineering Journal	2018	342		171	183	Clathrate Hydrates; Raman Spectroscopy; Co2 Capture; Selectivity; In-situ High Pressure Optical Microscopy	66
411	Continuous Separation of Co2 from A H2 + Co2 Gas Mixture Using Clathrate Hydrate	Horii, S; Ohmura, R	Applied Energy	2018	225		78	84	Clathrate Hydrate; Pre-combustion Capture; Co2 Separation; Ionic Semiclathrate Hydrate; Tetra-n-butylammonium Bromide (tba)	66
412	Formation of Methane Hydrate in the Presence of Natural and Synthetic Nanoparticles	Cox, SJ; Taylor, DJF; Youngs, TGA; Soper, AK; Totton, TS; Chapman, RG; Arjmandi, M; Hodges, MG; Skipper, NT; Michaelides, A	Journal of the American Chemical Society	2018	140	9	3277	3284	Gas-production; Anomalous Preservation; Dissociation; Recovery; Sediment; Point	66
413	Multiple Sulfur Isotope Constraints on Sulfate-driven Anaerobic Oxidation of Methane: Evidence from Authigenic Pyrite in Seepage Areas of the South China Sea	Lin, ZY; Sun, XM; Strauss, H; Lu, Y; Gong, JL; Xu, L; Lu, HF; Teichert, BMA; Peckmann, J	Geochimica Et Cosmochimica Acta	2017	211		153	173	Multiple Sulfur Isotopes; Oxygen Isotope; Pyrite; Sulfate-driven Anaerobic Oxidation of Methane; Organoclastic Sulfate Reduction	66
414	Enhanced Framboidal Pyrite Formation Related to Anaerobic Oxidation of Methane in the Sulfate-methane Transition Zone of the Northern South China Sea	Lin, Q; Wang, JS; Algeo, TJ; Sun, F; Lin, RX	Marine Geology	2016	379		100	108	Framboid Clusters; Aom; Smtz; Sulfate Reduction Zone; Elemental Sulfur	66
415	Relative Permeability to Water Or Gas in the Presence of Hydrates in Porous Media from Critical Path Analysis	Daigle, H	Journal of Petroleum Science and Engineering	2016	146		526	535	Methane Hydrates; Relative Permeability; Percolation Theory; Critical Path Analysis	66
416	Illuminating Solid Gas Storage in Confined Spaces - Methane Hydrate Formation in Porous Model Carbons	Borchardt, L; Nickel, W; Casco, M; Senkovska, I; Bon, V; Wallacher, D; Grimm, N; Krause, S; Silvestre-Albero, J	Physical Chemistry Chemical Physics	2016	18	30	20607	20614	Methane Hydrate; Gas-production; Production Behavior; Numerical-analysis; Water; Depressurization; Equilibrium; Pressures	66
417	Semiclathrate-based Co2 Capture from Flue Gas Mixtures: An Experimental Approach with Thermodynamic and Raman Spectroscopic Analyses	Kim, S; Seo, Y	Applied Energy	2015	154		987	994	Carbon Dioxide; Semiclathrate; Gas Hydrate; Quaternary Ammonium Salts; Flue Gas	66
418	Investigation of the Induction Time for Thf Hydrate Formation in Porous Media	Liu, WG; Wang, SR; Yang, MJ; Song, YC; Wang, SL; Zhao, JF	Journal of Natural Gas Science and Engineering	2015	24		357	364	Thf Hydrate; Induction Time; Memory Effect; Subcooling; Particle Size	66
419	Relation between Relative Permeability and	Li, CH; Zhao, Q; Xu, HJ; Feng, K;	Applied	2014	11	2	207	214	Gas Hydrate; Permeability; Nmr; Shenhu Area	66

序号	标题	作者	期刊名	年	卷	期	开始页码	结束页码	关键词	被引频次
	Hydrate Saturation in Shenhu Area, South China Sea	Liu, XW	Geophysics							
420	Experimental Study on Methane Hydrate Formation in A Partially Saturated Sandstone Using Low-field Nmr Technique	Ji, YK; Hou, J; Cui, GD; Lu, N; Zhao, EM; Liu, YL; Du, QJ	Fuel	2019	251		82	90	Methane Hydrate Formation; Low-field Nmr; Porous Media; Excess-gas Method; Magnetic Resonance Imaging	65
421	Physical Characteristic Analysis of Unconsolidated Sediments Containing Gas Hydrate Recovered from the Shenhu Area of the South China Sea	Kuang, YM; Yang, L; Li, QP; Lv, X; Li, YP; Yu, B; Leng, SD; Song, YC; Zhao, JF	Journal of Petroleum Science and Engineering	2019	181				Physical Properties; Hydrate-bearing Sediments; Shenhu Area; South China Sea	65
422	A Perspective on Dual Purpose Gas Hydrate and Corrosion Inhibitors for Flow Assurance	Qasim, A; Khan, MS; Lal, B; Shariff, AM	Journal of Petroleum Science and Engineering	2019	183				Amino Acids; Biomolecules; Corrosion Inhibitors; Gas Hydrate Inhibitors; Ghci; Ionic Liquids	65
423	the Controlling Factors and Ion Exclusion Mechanism of Hydrate-based Pollutant Removal	Dong, HS; Zhang, LX; Ling, Z; Zhao, JF; Song, YC	Acs Sustainable Chemistry & Engineering	2019	7	8	7932	7940	Hydrate; Heavy Metal; Wastewater; Ion Exclusion; Water Treatment	65
424	Effect of Silica Sand Size and Saturation on Methane Hydrate Formation in the Presence of Sds	Pan, Z; Liu, ZM; Zhang, ZE; Shang, LY; Ma, SH	Journal of Natural Gas Science and Engineering	2018	56		266	280	Methane Hydrate Formation; Silica Sand; Sodium Dodecyl Sulfate; Particle Size; Saturation; Capillary Force	65
425	Experimental Investigation into the Production Behavior of Methane Hydrate under Methanol Injection in Quartz Sand	Li, G; Wu, DM; Li, XS; Zhang, Y; Lv, QN; Wang, Y	Energy & Fuels	2017	31	5	5411	5418	Hydrate-bearing Sediments; Methane Hydrate; Gas-hydrate; Localized Deformation; Strain Localization; Shear-band; Sand; Model; Ct	65
426	the Effect of Hydrate Saturation on Water Retention Curves in Hydrate-bearing Sediments	Mahabadi, N; Zheng, XL; Jang, J	Geophysical Research Letters	2016	43	9	4279	4287	Activation-energy; Rate-constant; Gas; Decomposition; Kinetics; Heat; Ethane; Model	65
427	Fluid Source and Methane-related Diagenetic Processes Recorded in Cold Seep Carbonates from the Alvheim Channel, Central North Sea	Crémière, A; Lepland, A; Chand, S; Sahy, D; Kirsimäe, K; Bau, M; Whitehouse, MJ; Noble, SR; Martma, T; Thorsnes, T; Brunstad, H	Chemical Geology	2016	432		16	33	Anaerobic Oxidation of Methane; Authigenic Carbonates; Cold Seeps; North Sea; Rare-earth Elements; U-th Dating; Stable C and O Isotopes	65
428	Pore-level Hydrate Formation Mechanisms Using Realistic Rock Structures in High-pressure Silicon Micromodels	Hauge, LP; Gautepluss, J; Hoyland, MD; Erslund, G; Kovseck, A; Ferno, MA	International Journal of Greenhouse Gas Control	2016	53		178	186	Hydrate Growth Models; Pore-scale Visualization; Gas Production from Hydrates; Co2 Storage	65
429	Gas Nanobubbles as Nucleation Acceleration in the Gas-hydrate Memory Effect	Uchida, T; Yamazaki, K; Gohara, K	Journal of Physical Chemistry C	2016	120	47	26620	26629	Program Expedition 02; Eastern Continental-margin; Bearing Sediments; Elastic Properties; Marine-sediments; Offshore; Reservoir; India; Sea; Prospects	65

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430	Experimental Validation of Kinetic Inhibitor Strength on Natural Gas Hydrate Nucleation	Daraboina, N; Pachtsas, S; von Solms, N	Fuel	2015	139		554	560	Gas Hydrate; Kinetic Inhibition; Reservoir Fluids; Dissolved Salts; Rocking Cell	65
431	Comparison of the Physical and Geotechnical Properties of Gas-hydrate-bearing Sediments from Offshore India and Other Gas-hydrate-reservoir Systems	Winters, WJ; Wilcox-Cline, RW; Long, P; Dewri, SK; Kumar, P; Stern, L; Kerr, L	Marine and Petroleum Geology	2014	58		139	167	Physical Properties; Gas Hydrate; Porosity; Atterberg Limits; Consolidation; Permeability; Shear Strength; Scanning Electron Microscopy	65
432	Behaviors of Co ₂ Hydrate Formation in the Presence of Acid-dissolvable Organic Matters	Liu, YZ; Zhang, LX; Yang, L; Dong, HS; Zhao, JF; Song, YC	Environmental Science & Technology	2021	55	9	6206	6213	Pre-combustion Capture; Methane Hydrate; Porous-media; Phase-equilibria; Carbon-dioxide; Clathrate Hydrate; Kinetics; Growth; Co ₂ ; Electrolyte	64
433	Distribution and Reformation Characteristics of Gas Hydrate during Hydrate Dissociation by Thermal Stimulation and Depressurization Methods	Kou, X; Li, XS; Wang, Y; Zhang, Y; Chen, ZY	Applied Energy	2020	277				X-ray Ct; Gas Hydrate; Distribution; Hydrate Decomposition; Hydrate Reformation	64
434	Evaluation of the Performance of the Oceanic Hydrate Accumulation at Site Nghp-02-09 in the Krishna-godavari Basin during A Production Test and during Single and Multi-well Production Scenarios	Moridis, GJ; Reagan, MT; Queiruga, AF; Boswell, R	Marine and Petroleum Geology	2019	108		660	696	Gas Hydrates; Geomechanical Analysis; Reservoir Simulation; India National Gas Program	64
435	Investigation of Thermodynamic and Kinetic Effects of Cyclopentane Derivatives on Co ₂ Hydrates for Potential Application to Seawater Desalination	Hong, S; Moon, S; Lee, Y; Lee, S; Park, Y	Chemical Engineering Journal	2019	363		99	106	Gas Hydrate; Carbon Dioxide; Formation Kinetics; Phase Equilibria; Desalination	64
436	Geological Co ₂ Capture and Storage with Flue Gas Hydrate Formation in Frozen and Unfrozen Sediments: Method Development, Real Time-scale Kinetic Characteristics, Efficiency, and Clathrate Structural Transition	Hassanpouryouzband, A; Yang, JH; Tohidi, B; Chuvilin, E; Istomin, V; Bukhanov, B	Acs Sustainable Chemistry & Engineering	2019	7	5	5338	5345	Flue Gas; Co ₂ Capture and Storage; Frozen Sediments; Climate Change; Gas Hydrates; Permafrost	64
437	Characterising Thermally Controlled CH ₄ -CO ₂ Hydrate Exchange in Unconsolidated Sediments	Stanwix, PL; Rathnayake, NM; de Obanos, FPP; Johns, ML; Aman, ZM; May, EF	Energy & Environmental Science	2018	11	7	1828	1840	Natural-gas Hydrate; Surfactants; Storage; Kinetics	64
438	Experimental Study on the Gas Phase Permeability of Methane Hydrate-bearing Clayey Sediments	Liu, WG; Wu, ZR; Li, YH; Song, YC; Ling, Z; Zhao, JF; Lv, Q	Journal of Natural Gas Science and Engineering	2016	36		378	384	Hydrate-bearing Sediment; Gas Phase Permeability; Hydrate Saturation; Effective Axial Stress	64
439	Investigation of Natural Gas Hydrate Slurry Flow Properties and Flow Patterns Using A	Ding, L; Shi, BH; Lv, XF; Liu, Y; Wu, HH; Wang, W; Gong, J	Chemical Engineering	2016	146		199	206	Hydrates; Multiphase System; Slurry Flow Property; Flow Pattern Map; Flow Pattern	64

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	High Pressure Flow Loop		Science						Transition; Mechanism	
440	Gas Hydrates Distribution in the Shenhu Area, Northern South China Sea: Comparisons between the Eight Drilling Sites with Gas-hydrate Petroleum System	Su, M; Yang, R; Wang, H; Sha, Z; Liang, J; Wu, N; Qiao, S; Cong, X	Geologica Acta	2016	14	2	79	100	Gas Hydrate; Variable Distribution; Gas-hydrate Petroleum System; Shenhu Area; Northern South China Sea	64
441	Thermodynamic and Kinetic Analysis of Gas Hydrates for Desalination of Saturated Salinity Water	Seo, SD; Hong, SY; Sum, AK; Lee, KH; Lee, JD; Lee, BR	Chemical Engineering Journal	2019	370		980	987	Clathrate Hydrates; Desalination; Thermodynamics; Kinetics; Saturated Salinity	63
442	Enhancing Methane Hydrate Formation in Bulk Water Using Vertical Reciprocating Impact	Xiao, P; Yang, XM; Sun, CY; Cui, JL; Li, N; Chen, GJ	Chemical Engineering Journal	2018	336		649	658	Gas Hydrate; Methane Storage; Kinetics; Reciprocating Impact; Intensification Method	63
443	Observations of Bubbles in Natural Seep Flares at Mc 118 and Gc 600 Using in Situ Quantitative Imaging	Wang, BB; Socolofsky, SA; Breier, JA; Seewald, JS	Journal of Geophysical Research-oceans	2016	121	4	2203	2230	Model; Sediments	63
444	A Methodology of Porosity Estimation from Inversion of Post-stack Seismic Data	Kumar, R; Das, B; Chatterjee, R; Sain, K	Journal of Natural Gas Science and Engineering	2016	28		356	364	Mahanadi Basin; Krishna-godavari Basin; Gas Hydrate; Porosity; Seismic Inversion	63
445	Characterization of Kinetics of Hydrate Formation in the Presence of Kinetic Hydrate Inhibitors during Deepwater Drilling	Zhao, X; Qiu, ZS; Huang, WA	Journal of Natural Gas Science and Engineering	2015	22		270	278	Analysis Method; Kinetics of Hydrate Formation; Kinetic Hydrate Inhibitor; Lactam; Deepwater Drilling; Dynamic Condition	63
446	Structure of the Ice-clathrate Interface	Nguyen, AH; Koc, MA; Shepherd, TD; Molinero, V	Journal of Physical Chemistry C	2015	119	8	4104	4117	Methane Hydrate; Turbidite System; Canterbury Basin; New-zealand; Classification; Geomorphology; Stratigraphy; Salt	63
447	Architecture, Evolution History and Controlling Factors of the Baiyun Submarine Canyon System from the Middle Miocene to Quaternary in the Pearl River Mouth Basin, Northern South China Sea	Zhou, W; Wang, YM; Gao, XZ; Zhu, WL; Xu, Q; Xu, S; Cao, JZ; Wu, J	Marine and Petroleum Geology	2015	67		389	407	Unidirectionally Migrating Canyons; Bottom Currents; Slope Failures; Focused Fluid Flow; Pearl River Mouth Basin; Northern South China Sea	63
448	Effects of Thermodynamic Inhibitors on the Dissociation of Methane Hydrate: A Molecular Dynamics Study	Yagasaki, T; Matsumoto, M; Tanaka, H	Physical Chemistry Chemical Physics	2015	17	48	3234 7	3235 7	Methane Storage; Gas Hydrate; Transportation; Surfactant; Separation; Kinetics; System; Scale	63
449	the Dual Effect of Sodium Halides on the Formation of Methane Gas Hydrate	Nguyen, NN; Nguyen, AV	Fuel	2015	156		87	95	Methane; Gas Hydrate; Salt Effect; Hydrophobic Hydration	63
450	Field-scale Simulation of Production from Oceanic Gas Hydrate Deposits	Reagan, MT; Moridis, GJ; Johnson, JN; Pan, LH; Freeman, CM; Boyle,	Transport in Porous Media	2015	108	1	151	169	Gas Hydrates; Methane Hydrates; Oceanic Hydrates; Gas Production	63

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		KL; Keen, ND; Husebo, J								
451	Insights into Methane Hydrate Formation, Agglomeration, and Dissociation in Water Plus Diesel Oil Dispersed System	Chen, J; Liu, J; Chen, GQ; Sun, CY; Jia, ML; Liu, B; Si, S; Ren, N	Energy Conversion and Management	2014	86		886	891	Hydrate; Methane; Agglomeration; Formation; Dissociation; Dispersion	63
452	3d Inversion and Resolution Analysis of Land-based Csem Data from the Ketzin Co2 Storage Formation	Grayver, AV; Streich, R; Ritter, O	Geophysics	2014	79	2	E101	E114	Methane Hydrate; Dissociation; Resistivity; Saturation; Logs	63
453	Comparative Analysis of the Production Trial and Numerical Simulations of Gas Production from Multilayer Hydrate Deposits in the Qilian Mountain Permafrost	Sun, YH; Li, B; Guo, W; Lu, XS; Zhang, YQ; Li, K; Wang, PK; Jin, GR; Jia, R; Qu, LL	Journal of Natural Gas Science and Engineering	2014	21		456	466	Gas Hydrate; Tough Plus Hydrate; Numerical Simulation; Production Trial; Comparative Analysis	63
454	Depositional Characteristics and Accumulation Model of Gas Hydrates in Northern South China Sea	Yu, XH; Wang, JZ; Liang, JQ; Li, SL; Zeng, XM; Li, W	Marine and Petroleum Geology	2014	56		74	86	Northern South China Sea; Gas Hydrate; Bottom Simulating Reflectors (bsrs); Gas Hydrate Stability Zone (ghsz); Depositional Accumulation Model	63
455	Solute Precipitate Nucleation: A Review of Theory and Simulation Advances	Agarwal, V; Peters, B	Advances in Chemical Physics, Vol 155	2014	155		97	159	Surfactant; Kinetics; Storage; System; Water; Ice	63
456	Water Desalination Using R141b Gas Hydrate Formation	Karamoddin, M; Varaminian, F	Desalination and Water Treatment	2014	52	13-15	2450	2456	R141b; Gas Hydrate; Growth Rate; Desalination	63
457	Effect of Pressure Drawdown Rate on the Fluid Production Behaviour from Methane Hydrate-bearing Sediments	Yin, ZY; Wan, QC; Gao, Q; Linga, P	Applied Energy	2020	271				Methane Hydrate; Dissociation; Depressurization; Pressure Drawdown Rate; Fluid Production; Water Gas Ratio	62
458	Gas Hydrate Saturation and Morphology from Analysis of Pressure Cores Acquired in the Bay of Bengal during Expedition Nghp-02, Offshore India	Holland, ME; Schultheiss, PJ; Roberts, JA	Marine and Petroleum Geology	2019	108		407	423	Gas Hydrate Quantification; X-ray Computed Tomography; Methane Mass Balance; Gas Hydrate Veins; Fracture-filling Hydrate; Pore-filling Hydrate; Pressure Core Quality	62
459	A Major Sea-level Drop Briefly Precedes the Toarcian Oceanic Anoxic Event: Implication for Early Jurassic Climate and Carbon Cycle	Krencker, FN; Lindström, S; Bodin, S	Scientific Reports	2019	9				Density-functional Theory; Next-generation; Phase-equilibria; Fugacity Model; Gas; Si; Potentials; Pressure; Argon	62
460	Effect of Gas Hydrate Formation and Decomposition on Flow Properties of Fine-grained Quartz Sand Sediments Using X-ray Ct Based Pore Network Model Simulation	Wang, DG; Wang, CC; Li, CF; Liu, CL; Lu, HL; Wu, NY; Hu, GW; Liu, LL; Meng, QG	Fuel	2018	226		516	526	X-ray Ct; Pore Network Modeling; Gas Hydrate; Pore Structure; Flow Properties	62
461	Modeling of Gas Hydrate Phase Equilibria: Extremely Randomized Trees and Lssvm Approaches	Yarveicy, H; Ghiasi, MM	Journal of Molecular Liquids	2017	243		533	541	Gas Hydrate; Phase Equilibria; Extra Trees; Lssvm; Modeling	62

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462	Effect of KCl and MgCl ₂ on the Kinetics of Methane Hydrate Formation and Dissociation in Sandy Sediments	Chong, ZR; Koh, JW; Linga, P	Energy	2017	137		518	529	Gas Hydrates; Energy Recovery; Methane Hydrates; Thermal Stimulation; Gas Production; Marine Sediments	62
463	Effect of Graphite Nanoparticles on CO ₂ Hydrate Phase Equilibrium	Yu, YS; Zhou, SD; Li, XS; Wang, SL	Fluid Phase Equilibria	2016	414		23	28	Phase Equilibrium; Graphite Nanoparticles; Hydrate Formation; Thermodynamic Model; Average Deviation	62
464	Marine Geohazards: Review and Future Perspective	Jia, YG; Zhu, CQ; Liu, LP; Wang, D	Acta Geologica Sinica-english Edition	2016	90	4	1455	1470	Marine Geohazards; Submarine Landslide; Gas Hydrate; Coastal Erosion; In-situ Observation	62
465	Surfactant Effects on Crystal Growth Dynamics and Crystal Morphology of Methane Hydrate Formed at Gas/Liquid Interface	Hayama, H; Mitarai, M; Mori, H; Verrett, J; Servio, P; Ohmura, R	Crystal Growth & Design	2016	16	10	6084	6088	Natural-gas Hydrate; Thermal-stimulation; Dissociation; Conductivity; Reactor; Heat	62
466	Evaluation on the Gas Production Potential of Different Lithological Hydrate Accumulations in Marine Environment	Huang, L; Su, Z; Wu, NY	Energy	2015	91		782	798	Hydrate; Shenhu; Grain Size; Different Lithological Deposits; Gas Production Potential	62
467	Effect of Methane Hydrate Morphology on Compressional Wave Velocity of Sandy Sediments: Analysis of Pressure Cores Obtained in the Eastern Nankai Trough	Konno, Y; Jin, Y; Yoneda, J; Kida, M; Egawa, K; Ito, T; Suzuki, K; Nagao, J	Marine and Petroleum Geology	2015	66		425	433	Gas Hydrate; Hydrate Saturation; P-wave Velocity; Pressure Coring; Turbidite	62
468	the Pliensbachian-toarcian (early Jurassic) Extinction: A North American Perspective	Caruthers, AH; Smith, PL; Gröcke, DR	Volcanism, Impacts, and Mass Extinctions: Causes and Effects	2014	505		225	243	Qilian Mountain Permafrost; Methane Hydrate; Noble-gases; Helium; Qinghai; Energy; Carbon; Basin; Soil; Oil	62
469	New Observations and Insights into the Morphology and Growth Kinetics of Hydrate Films	Li, SL; Sun, CY; Liu, B; Li, ZY; Chen, GJ; Sum, AK	Scientific Reports	2014	4				Methane Hydrate; Aqueous-solutions; Sodium-chloride; Carbon-dioxide; Ethane Hydrate; Pure Water; Mixtures; NaCl; Temperature; MgCl ₂	62
470	Shallow Methane Hydrate System Controls Ongoing, Downslope Sediment Transport in A Low-velocity Active Submarine Landslide Complex, Hikurangi Margin, New Zealand	Mountjoy, JJ; Pecher, I; Henrys, S; Crutchley, G; Barnes, PM; Plaza-Faverola, A	Geochemistry Geophysics Geosystems	2014	15	11	4137	4156	Clathrate Hydrate; Fe ₃ O ₄ Nanoparticles; Crystal-growth; Gas; Storage; Surfactant; Dissociation; Enhancement; Technology; Mixture	62
471	Gas Hydrate Formation Condition: Review on Experimental and Modeling Approaches	Shahnazar, S; Hasan, N	Fluid Phase Equilibria	2014	379		72	85	Hydrate; Review; Phase Equilibrium; Formation Condition	62
472	A Comprehensive Review of Hydrogen Production and Storage: A Focus on the Role	Epelle, EI; Desongu, KS; Obande, W; Adeleke, AA; Ikubanni, PP; Okolie,	International Journal of	2022	47	47	2039 8	2043 1	Hydrogen; Nanomaterials; Electrolysis; Water Splitting; Gasification; Activated Carbon	61

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	of Nanomaterials	JA; Gunes, B	Hydrogen Energy							
473	Replacement in Ch4-co2Hydrate below Freezing Point Based on Abnormal Self-preservation Differences of Ch4Hydrate	Xie, Y; Zhu, YJ; Zheng, T; Yuan, Q; Sun, CY; Yang, LY; Chen, GJ	Chemical Engineering Journal	2021	403				Gas Hydrate; Ch4-co2 Hydrate Replacement; below Freezing Point; Anomalous Self-preservation Region; Multi-defective Ice	61
474	Review of Application of Molecular Dynamics Simulations in Geological Sequestration of Carbon Dioxide	Ma, ZY; Ranjith, PG	Fuel	2019	255				Geological Sequestration of Carbon Dioxide; Molecular Dynamics Simulation; Caprock; Coal Bed Methane; Enhanced Oil/gas Recovery; Methane Hydrate	61
475	Influence of Core Scale Permeability on Gas Production from Methane Hydrate by Thermal Stimulation	Song, YC; Kuang, YM; Fan, Z; Zhao, YC; Zhao, JF	International Journal of Heat and Mass Transfer	2018	121		207	214	Methane Hydrate; Gas Production; Permeability; Thermal Stimulation; Numerical Simulation	61
476	Understanding the Characteristic of Methane Hydrate Equilibrium in Materials and Its Potential Application	Liu, H; Zhan, SY; Guo, P; Fan, SS; Zhang, SL	Chemical Engineering Journal	2018	349		775	781	Gas Hydrate; Porous Materials; Hydrate Dissociation; Methane Storage	61
477	Ch4-co2 Replacement Occurring in Sii Natural Gas Hydrates for Ch4 Recovery and Co2 Sequestration	Lee, Y; Choi, W; Shin, K; Seo, Y	Energy Conversion and Management	2017	150		356	364	Gas Hydrate; Replacement; Co2 Sequestration; Structure Ii; Dissociation Enthalpy	61
478	Generation of Micro- and Nano-bubbles in Water by Dissociation of Gas Hydrates	Uchida, T; Yamazaki, K; Gohara, K	Korean Journal of Chemical Engineering	2016	33	5	1749	1755	Microbubble; Nanobubble; Gas Hydrate Dissociation; Freeze Fracture Replica; Bubble Pressure; Memory Effect	61
479	Dissociation of Natural and Artificial Gas Hydrate	Misyura, SY; Donskoy, IG	Chemical Engineering Science	2016	148		65	77	Methane Gas Hydrate; Hydrate Dissociation Simulation; Pores; Kinetics; Filtration	61
480	Free Energy Landscape and Molecular Pathways of Gas Hydrate Nucleation	Bi, YF; Porras, A; Li, TS	Journal of Chemical Physics	2016	145	21			Next-generation; Gas Hydrate; Dissociation Pressures; Equilibrium Conditions; Organic Inhibitors; Fugacity Model; Carbon-dioxide; Methane; Prediction; Ethane	61
481	Organic Matter Production and Preservation in the Lusitanian Basin (portugal) and Pliensbachian Climatic Hot Snaps	Silva, RL; Duarte, LV	Global and Planetary Change	2015	131		24	34	Elemental Geochemistry; Black Shales; Paleooceanography; Pliensbachian; Lusitanian Basin	61
482	Effects of Operating Mode and Pressure on Hydrate-based Desalination and Co2 Capture in Porous Media	Yang, MJ; Song, YC; Jiang, LL; Liu, WG; Dou, BL; Jing, W	Applied Energy	2014	135		504	511	Gas Hydrate; Co2 Capture; Desalination; Porous Media	61
483	Long-timescale Variation in Bulk and Clay Mineral Composition of Indian Continental Margin Sediments in the Bay of Bengal,	Phillips, SC; Johnson, JE; Underwood, MB; Guo, JH; Giosan, L; Rose, K	Marine and Petroleum Geology	2014	58		117	138	X-ray Diffraction; Indian Ocean; Gas Hydrate; Deccan Basalt; Illite; Smectite; Chlorite; Kaolinite	61

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	Arabian Sea, and Andaman Sea									
484	Dissociation Characteristics of Methane Hydrates in South China Sea Sediments by Depressurization	Yang, MJ; Zheng, JN; Gao, Y; Ma, ZQ; Lv, X; Song, YC	Applied Energy	2019	243		266	273	Methane Hydrate; Depressurization; Gas Production; Real Marine Sediments	60
485	Desalination Using Gas Hydrates: the Role of Crystal Nucleation, Growth and Separation	Khan, MN; Peters, CJ; Koh, CA	Desalination	2019	468				Seawater Desalination; Gas Hydrates; Nucleation; Hydrate Growth; High Pressure	60
486	Inhibitory Effect of Water-based Drilling Fluid on Methane Hydrate Dissociation	Zhao, X; Qiu, ZS; Zhao, C; Xu, JG; Zhang, YB	Chemical Engineering Science	2019	199		113	122	Hydrate Dissociation Inhibitor; Methane Hydrate; Drilling Fluid; Inhibitory Effect; Lecithin	60
487	Visualization Study on the Promotion of Natural Gas Hydrate Production by Water Flow Erosion	Chen, BB; Yang, MJ; Sun, HR; Wang, PF; Wang, DY	Fuel	2019	235		63	71	Methane Hydrate; Water Flow; Hydrate Distribution; Hydrate Exploitation	60
488	Adsorption of Kinetic Hydrate Inhibitors on Growing Surfaces: A Molecular Dynamics Study	Yagasaki, T; Matsumoto, M; Tanaka, H	Journal of Physical Chemistry B	2018	122	13	3396	3406	Behavior; Sediments; Strength; Media	60
489	Tidally Controlled Gas Bubble Emissions: A Comprehensive Study Using Long-term Monitoring Data from the Neptune Cabled Observatory Offshore Vancouver Island	Römer, M; Riedel, M; Scherwath, M; Heesemann, M; Spence, GD	Geochemistry Geophysics Geosystems	2016	17	9	3797	3814	Methane Seepage; Multibeam Rotary Sonar; Temporal Variability; Time-series Analyses; Northern Cascadia Margin	60
490	the Influence of Porosity and Structural Parameters on Different Kinds of Gas Hydrate Dissociation	Misyura, SY	Scientific Reports	2016	6				Molecular-dynamics Simulation; Growth Inhibition; Synergism; Polymers; Salt	60
491	Hydrophobized Particles Can Accelerate Nucleation of Clathrate Hydrates	Li, HJ; Wang, LG	Fuel	2015	140		440	445	Hydrophobicity; Surfactant Coating; Induction Time; Probability Distribution; Nucleation Rate	60
492	Physical Properties and Sedimentological Features of Hydrate-bearing Samples Recovered from the First Gas Hydrate Production Test Site on Daini-atsumi Knoll around Eastern Nankai Trough	Suzuki, K; Schultheiss, P; Nakatsuka, Y; Ito, T; Egawa, K; Holland, M; Yamamoto, K	Marine and Petroleum Geology	2015	66		346	357	Gas Hydrates; Methane Hydrate Saturation; P-wave Velocity; Pressure Core; Logging-while-drilling (lwd)	60
493	Dsc and Thermal Imaging Studies of Methane Hydrate Formation and Dissociation in Water Emulsions in Crude Oils	Semenov, ME; Manakov, AY; Shitz, EY; Stoporev, AS; Altunina, LK; Strelets, LA; Misyura, SY; Nakoryakov, VE	Journal of Thermal Analysis and Calorimetry	2015	119	1	757	767	Methane Hydrate; Crude Oil; Emulsion; Dsc	60
494	Thermodynamic and Kinetic Verification of Tetra-n-butyl Ammonium Nitrate (tbano3) as A Promoter for the Clathrate Process Applicable to Precombustion Carbon Dioxide Capture	Babu, P; Yao, MH; Datta, S; Kumar, R; Linga, P	Environmental Science & Technology	2014	48	6	3550	3558	Clathrate Hydrate; Carbon-dioxide; Gas Hydrate; Equilibrium Data; Natural-gas; Thf; Methane; Separation; Hydrogen; Tetrahydrofuran	60

序号	标题	作者	期刊名	年	卷	期	开始页码	结束页码	关键词	被引频次
495	Methane Fluxes and Carbonate Deposits at A Cold Seep Area of the Central Nile Deep Sea Fan, Eastern Mediterranean Sea	Römer, M; Sahling, H; Pape, T; Ferreira, CD; Wenzhöfer, F; Boetius, A; Bohrmann, G	Marine Geology	2014	347		27	42	Deep-water Hydrocarbon Seepage; Gas Flares; Authigenic Carbonates; Autonomous Underwater Vehicle; High-resolution Multibeam Mapping; Carbon Budgets	60
496	Monsoon-influenced Variation in Productivity and Lithogenic Sediment Flux since 110 Ka in the Offshore Mahanadi Basin, Northern Bay of Bengal	Phillips, SC; Johnson, JE; Giosan, L; Rose, K	Marine and Petroleum Geology	2014	58		502	525	Mass Accumulation Rate; Indian Ocean; Grain Size; Calcium Carbonate; Organic Carbon; C4 Plant; Magnetic Susceptibility; Zr/rb	60
497	Phase Behavior of Methane Hydrate in Silica Sand	Sun, SC; Liu, CL; Ye, YG; Liu, YF	Journal of Chemical Thermodynamics	2014	69		118	124	Phase Behavior; Methane Hydrate; Silica Sand	60
498	Experimental and Modeling Investigation of Kinetics of Methane Gas Hydrate Formation in Water-in-oil Emulsion	Mu, L; Li, S; Ma, QL; Zhang, K; Sun, CY; Chen, GJ; Liu, B; Yang, LY	Fluid Phase Equilibria	2014	362		28	34	Gas Hydrate; Kinetics; Emulsion; Dispersed System	60
499	Three-body Aggregation of Guest Molecules as A Key Step in Methane Hydrate Nucleation and Growth	Hu, WF; Chen, C; Sun, JY; Zhang, N; Zhao, JF; Liu, Y; Ling, Z; Li, WZ; Liu, WG; Song, YC	Communications Chemistry	2022	5	1			Numerical-analysis	59
500	Drivers, Challenges, and Emerging Technologies for Desalination of High-salinity Brines: A Critical Review	Shah, KM; Billinge, IH; Chen, X; Fan, HQ; Huang, YX; Winton, RK; Yip, NY	Desalination	2022	538				Desalination; Hypersaline Brines; Zero Liquid Discharge; Emerging Technologies; Fit-for-purpose Water Reuse; Energy Consumption; Scaling	59