



# 中国地质

GEOLOGY IN CHINA

ISSN 1000-3657

CN 11-1167/P

CODEN ZDHIAH

2022

第 49 卷第 4 期

Vol.49 No.4

## 特别关注

中国地质调查局——自然资源要素综合观测网络工程

自然资源定义、分类、观测监测及其在国土规划治理中的应用

黑龙江双阳河流域土壤-作物-人体系统中硒元素及生态环境与人体健康评价

环渤海湿地沉积物球囊霉素相关土壤蛋白分布特征及其对湿地土壤风化的影响

近 20 年来长江三角洲海岸带典型区土地利用变化与生态环境效应研究

黄河支流汾河流域水资源开发利用现状及生态环境问题

内蒙古二连盆地哈达图砂岩铀矿渗出铀成矿作用

科学出版社

主管：中国地质调查局  
主办：中国地质调查局  
中国地质科学院

2022 年 8 月出版

# 中国地质(双月刊)

(ZHONGGUO DIZHI)

2022年08月第49卷第4期(总第411期)

## 目 次

### 特别关注

- 内蒙古二连盆地哈达图砂岩铀矿渗出铀成矿作用 ..... 李子颖, 刘武生, 李伟涛, 李西德,  
秦明宽, 蔡煜琦, 张云龙, 何升, 吴曲波, 邱林飞, 刘持恒, 朱鹏飞, 纪宏伟, 郭建(1009)  
自然资源定义、分类, 观测监测及其在国土规划治理中的应用  
..... 付宇佳, 谭昌海, 刘晓煌, 孙兴丽, 袁泽民, 郑艺文(1048)  
黑龙江双阳河流域土壤-作物-人体系统中硒元素及生态环境与人体健康评价  
..... 梁帅, 戴慧敏, 刘国栋, 翟富荣, 刘凯, 韩晓萌, 宋运红, 赵君, 张哲寰(1064)  
环渤海湿地沉积物球囊霉素相关土壤蛋白分布特征及其对湿地土壤风化的影响  
..... 周攀, 叶思源, 王锦, 于长斌, 袁红明, 裴理鑫, 丁喜桂, 杨娟, HANS Brix(1075)  
河北承德偏硅酸矿泉水成因模式: 岩石风化与水岩作用证据  
..... 孙厚云, 孙晓明, 卫晓锋, 陈自然, 刘卫, 黄行凯, 李霞, 殷志强, 刘文波(1088)

### 综述性论文

- 近20年来长江三角洲海岸带典型区土地利用变化与生态环境效应研究  
..... 李梅娜, 印萍, 段晓勇, 董超, 曹珂, 杨磊, 陈选博(1114)  
黄河支流汾河流域水资源开发利用现状及生态环境问题 ..... 申豪勇, 李佳, 王志恒,  
..... 谢浩, 梁永平, Yongxin Xu, 韩双宝, 任建会, 潘尧云, 赵春红, 赵一(1127)  
南方岩溶区地下水资源特征与水资源保障对策  
..... 夏日元, 卢海平, 曹建文, 赵良杰, 王喆, 栾崧(1139)  
新疆大地构造单元划分及成矿作用  
..... 冯京, 朱志新, 赵同阳, 陈正乐, 顾雪祥, 孟贵祥, 徐仕琪, 田江涛, 李平(1154)  
华北地区金矿成矿规律及资源潜力  
..... 付超, 党智财, 李俊建, 周淑敏, 倪振平, 彭翼, 宋立军, 张彤, 侯占国(1179)

### 学术论文

- 西藏甲玛矿床磁黄铁矿微量元素特征及其与金富集沉淀的耦合机制  
..... 杨征坤, 杨阳, 张忠坤, 林彬, 赫健, 张泽斌, 高福太, 唐晓倩, 唐攀, 祁婧, 李怡萱(1198)  
四川甲基卡X03号脉接触变质岩中Cs等稀有元素赋存状态及其综合利用建议  
..... 梁斌, 付小方, 黎诗宏, 唐屹, 潘蒙, 郝雪峰(1214)  
河南方城大庄铌-稀土矿床碱性正长岩成矿机理研究  
..... 李山坡, 乔欣欣, 陈俊魁, 郑凯, 潘小娜, 吴祥珂, 张哨波, 张荣臻, 高传宝(1224)

贵州三穗铀矿床矿石矿物学特征及其对找矿的指示	金中国, 刘开坤, 郑明泓, 罗开, 杨胜发, 淳果, 王琼, 范云飞(1236)
广西五圩矿田箭猪坡锑多金属矿综合信息找矿模型	刘伟, 黄理善, 丁汝福, 徐文杰, 胡乔帆, 周守余, 赵毅(1250)
浙西南—赣东北地区寒武系荷塘组页岩气成藏地质条件及有利区带优选	邵威, 黄正清, 李建青, 周道容(1262)
川西坳陷东坡地区沙溪庙组断裂对天然气富集的控制作用	范赛华, 谢辉, 李彬文, 刘媛, 李卫平, 许维娜, 赵虎, 牟蕾(1275)
辽西牛营子凹陷中元古界推覆体以下发现早中侏罗世优质烃源岩新地层	孙求实, 宗文明, 王斯佳, 孙守亮, 李永飞, 邹晓勇, 张涛(1285)
四川理塘地区花岗闪长岩特征及其增生楔弧岩浆活动	严松涛, 吴青松, 谭昌海, 刘陇强, 张勇, 李余生(1295)
广西柳东地区火山岩锆石U-Pb-Hf同位素特征及其对岩浆源区的限定	魏春夏, 陆刚, 杨锋, 李巍, 钟锋运, 金靖杰, 潘艺文, 梁力杰, 白晓(1309)
内蒙古赤峰五十家子岩体成因及其对岩石圈伸展减薄的指示	尚永明, 李小伟, 祝新友, 邹滔, 黄行凯, 程细音, 王力, 王树星(1323)
<b>发现与进展</b>	
安徽省潜山盆地发现恐龙蛋化石	陈忠良, 何情, 张蜀康, 程小青(1346)
垭紫罗裂陷槽西北缘黔宁地1井钻获石炭系页岩气	高堋, 林拓, 苑坤, 金春爽, 陈相霖, 王文彬(1348)
北部湾盆地乌石凹陷发现晚二叠世花岗岩:来自乌石1井岩心锆石U-Pb年龄的证据	郑和荣, 罗军, 张英, 冯建贊, 曾彦, 王鸣川(1350)
华北克拉通鞍山式铁矿床中发现新类型铌钽矿化	李立兴, 李厚民, 付建飞, 马玉波, 姚玉增, 栾金鹏(1353)
甘肃景泰盆地三叠系发现大型焦煤	王红霞, 柳永刚, 马思弼(1355)
<b>简讯与热点</b>	
世界各国与碳捕获和地质封存(CCS)相关的126项法律/政策/标准一览表	马冰(1357)
自然资源要素综合观测一体化平台简介	(封二)
《中国地质》编辑工作指导委员会、《中国地质》(中文)编辑委员会	(封三)
《中国地质》(双月刊)栏目设置与稿约	(I)

# GEOLOGY IN CHINA

(Bimonthly)

Aug. 2022 Vol. 49, No.4 (Serial No. 411)

## Contents

### In Focus

- Exudative metallogeny of the Hadatu sandstone-type uranium deposit in the Erlian Basin, Inner Mongolia ..... *LI Ziying, LIU Wusheng, LI Weitao, LI Xide, QIN Mingkuan, CAI Yuqi, ZHANG Yunlong, HE Sheng, WU Qubo, QIU Linfei, LIU Chiheng, ZHU Pengfei, JI Hongwei, GUO Jian*(1009)
- Definition, classification, observation and monitoring of natural resources and their application in territorial planning and governance ..... *FU Yujia, TAN Changhai, LIU Xiaohuang, SUN Xingli, YUAN Zemin, ZHENG Yiwen*(1048)
- Geochemical characteristics and evaluation of ecological environment and human health of selenium in soil–crop–human system in Shuangyang River Basin, Heilongjiang ..... *LIANG Shuai, DAI Huimin, LIU Guodong, ZHAI Furong, LIU Kai, HAN Xiaomeng, SONG Yunhong, ZHAO Jun, ZHANG Zhehuan*(1064)
- Glomalin–related soil protein distribution and its relation to mineral weathering in the wetlands along the Bohai Sea, China ..... *ZHOU Pan, YE Siyuan, WANG Jing, YU Changbin, YUAN Hongming, PEI Lixin, DING Xigui, YANG Juan, HANS Brix*(1075)
- Formation mechanism of metasilicate mineral water in Chengde, Hebei Province: Evidence from rock weathering and water–rock interaction ..... *SUN Houyun, SUN Xiaoming, WEI Xiaofeng, CHEN Ziran, LIU Wei, HUANG Xingkai, LI Xia, YIN Zhiqiang, LIU Wenbo*(1088)

### Reviews

- Land use change and ecosystem effect in typical coastal zone of Yangtze River Delta in the last 20 years ..... *LI Meina, YIN Ping, DUAN Xiaoyong, DONG Chao, CAO Ke, YANG Lei, CHEN Xuanbo*(1114)
- Water resources utilization and eco–environment problem of Fenhe River, branch of Yellow River ..... *SHEN Haoyong, LI Jia, WANG Zhiheng, XIE Hao, LIANG Yongping, Yongxin XU, HAN Shuangbao, REN Jianhui, PAN Yaoyun, ZHAO Chunhong, ZHAO Yi*(1127)
- Characteristics of groundwater resources of karst areas in the Southern and water resources guarantee countermeasures ..... *XIA Riyuan, LU Haiping, CAO Jianwen, ZHAO Liangjie, WANG Zhe, LUAN Song*(1139)
- Subdivision of tectonic units and its metallogenesis in Xinjiang ..... *FENG Jing, ZHU Zhixin, ZHAO Tongyang, CHEN Zhengle, GU Xuexiang, MENG Guixiang, XU Shiqi, TIAN Jiangtao, LI Ping*(1154)
- Regional metallogeny and resource potential of gold deposits in North China ..... *FU Chao, DANG Zhicai, LI Junjian, Zhou Shumin, NI Zhenping, PENG Yi, SONG Lijun, ZHANG Tong, HOU Zhanguo*(1179)

### Research Articles

- Geochemistry of pyrrhotite in the Jiama deposit, Tibet and its relationship with gold enrichment and precipitation ..... *YANG Zhengkun, YANG Yang, ZHANG Zhongkun, LIN Bin, HE Jian, ZHANG Zebin, GAO Futai, TANG Xiaoqian, TANG Pan, QI Jing, LI Yixuan*(1198)
- Distribution and occurrence of Cs and other rare elements in contact metamorphic rocks of X03 supergiant deposit in Jiajika, Sichuan and its comprehensive utilization suggestion ..... *LIANG Bin, FU Xiaofang, LI Shihong, TANG Yi, PAN Meng, HAO Xuefeng*(1214)
- Metallogenic mechanism of alkalinesyenite in Dazhuang Nb–REE deposit ,Fangcheng, Henan Province ..... *LI Shapu, QIAO Xinxin, CHEN Junkui, ZHENG Kai, PAN Xiaona*,

(Executive editors of this issue:LI Yaping, GUO Hui, WANG Xueming)

*WU Xiangke, ZHANG Shaobo, ZHANG Rongzhen, GAO Chuanbao(1224)*

Ore mineralogical characteristics of Sansui uranium deposit in Guizhou Province, China and indication for prospecting ..... *JIN Zhongguo, LIU Kaikun, ZHENG Minghong, LUO Kai,*

*YANG Shengfa, CHUN Guo, WANG Qiong, FAN Yunfei(1236)*

Comprehensive information prospecting model for Jianzhupo antimony polymetallic deposit in Wuxu Mine Field, Guangxi ..... *LIU Wei, HUANG Lishan, DING Rufu, XU Wenjie,*

*HU Qiaofan, ZHOU Shouyu, ZHAO Yi(1250)*

Shale gas reservoir-forming conditions and exploration prospecting in the Cambrian Hetang Formation of southwestern Zhejiang and northeastern Jiangxi Province

..... *SHAO Wei, HUANG Zhengqing, LI Jianqing, ZHOU Daorong(1262)*

Controlling effect of Shaximiao Formation fault on gas accumulation in eastern slope area of Western Sichuan Depression ..... *FAN Saihua, XIE Hui, LI Binwen, LIU Yuan, LI Weiping,*

*XU Weina, ZHAO Hu, MOU Lei(1275)*

Discovery of the Jurassic strata of organic-rich source rocks under the Middle Proterozoic thrust-nappe in Niuyingzi depression, western Liaoning Province ..... *SUN Qiushi, ZONG Wenming, WANG Sijia,*

*SUN Shouliang, LI Yongfei, GAO Xiaoyong, ZHANG Tao(1285)*

Characteristics of granodiorite in the Litang area of Sichuan and its volcanic arc magmatism accretionary wedge

..... *YAN Songtao, WU Qingsong, TAN Changhai, LIU Longqiang, ZHANG Yong, LI Yusheng(1295)*

Zircon U-Pb ages and Hf isotopic compositions of volcanic rocks in Eastern Liuzhou, Guangxi: Constraint for source characteristics of magmas ..... *WEI Chunxia, LU Gang, YANG Feng, LI Wei,*

*ZHONG Fengyun, JIN Jingjie, PAN Yiwen, LIANG Lijie, BAI Xiao(1309)*

Petrogenesis and its implications for the lithospheric thinning of the Wushijiazi pluton in Chifeng, Inner Mongolia

..... *SHANG Yongming, LI Xiaowei, ZHU Xinyou, ZOU Tao, HUANG Xingkai,*

*CHENG Xiyin, WANG Li, WANG Shuxing(1323)*

## **Discoveries and Developments**

The first record of dinosaur eggs from the Qianshan Basin of Anhui Province, China

..... *CHEN Zhongliang, HE Qing, ZHANG Shukang, CHENG Xiaoqing(1346)*

Carboniferous shale gas obtained by well QND-1 in the northwest of Yadu-Ziyun-Luodian Aulacogen

..... *GAO Peng, LIN Tuo, YUAN Kun, JIN Chunshuang, CHEN Xianglin, WANG Wenbin(1348)*

Discovery of Late Permian granites in Wushi Sag, Beibowan Basin: Evidence for zircon U-Pb age from cores of Well Wushi 1

..... *ZHENG Herong, LUO Jun, ZHANG Ying, FENG Jianyun, ZENG Yan, WANG Mingchuan(1350)*

A new type of Nb-Ta mineralization discovered in the Neoarchean Anshan-type iron deposit of the northern North China Craton

..... *LI Lixing, LI Houmin, FU Jianfei, MA Yubo, YAO Yuzeng, LUAN Jinpeng(1353)*

The first discovery of large coking coal in Triassic strata of Jingtai Basin, Gansu Province

..... *WANG Hongxia, LIU Yonggang, MA Sibi(1355)*

## **News and Highlights**

A summary table of 126 acts / policies / standards related to carbon capture and storage (CCS) in the world

..... *MA Bing(1357)*