ACTA GEOLOGICA SINICA

(English Edition

SINICA (English Edition)

GEOLOGICA



Journal of the Geological Society of China

ACTA GEOLOGICA SINICA (English Edition)

地质学报(英文版)

Dizhi Xuebao (Yingwen Ban) Vol. 95 No. 4 2021

Edited by: Editorial Board

ACTA GEOLOGICA SINICA (English Edition)

Geological Society of China

26 Baiwanzhuang Rd., Beijing 100037, China

Tel: +86 10 68999024; Fax: +86 10 68995305

E-mail: geoacta@163.com

http://www.geojournals.cn/dzxbcn/ch/index.aspx

http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1755-6724

Published and distributed by: Geological Society of China

26 Baiwanzhuang Rd., Beijing 100037, China

http://www.geosociety.org.cn

Supervised by: China Association for Science and Technology

History of Acta Geologica Sinica

- In 1922, the Bulletin of the Geological Society of China (mainly in English) started publication.
- In 1952, the *Bulletin* was renamed *Acta Geologica Sinica* (in Chinese with English abstracts).
- In March 1988, Acta Geologica Sinica (English Edition) was reformed to publish the English translation of the Chinese edition. It was separately numbered as agreed with its exclusive overseas distributor Pergamon Press so as to be distinguished from the Chinese edition.
- From 1997 on, Acta Geologica Sinica (English Edition) has been publishing English originals, with the same volume numbering as that of the Chinese edition.

ISSN 1000-9515



ISSN 1000-9515 CN 11-2001/P







ACTA GEOLOGICA SINICA (English Edition)

Vol. 95 No. 4 2021

CONTENTS

ORIGINAL ARTICLES

GAI Zhikun, BAI Zhijun, LIN Xianghong, MENG Xinyuan and ZHANG Junwen	1057
First Discovery of <i>Dicerorhinus sumatrensis</i> from Yanjinggou Provides Insights into the Pleistocene Rhinocerotidae of South China CHEN Shaokun, PANG Libo, YAN Yaling, WEI Guangbiao and YUE Zongying	1065
Revision to <i>Kowalskia</i> from the Houhecun Fauna and a New Discovery of <i>Tscherskia</i> (Cricetidae, Rodentia) from the Youhe Fauna of Weinan, Shaanxi Province, China XIE Kun, ZHANG Yunxiang and LI Yongxiang	1073
On the Validity and Evolution of Assilina Species during the Ypresian–Lutetian: Example from Bir Dakhl, Eastern Desert, Egypt Safia AL MENOUFY and Mohamed BOUKHARY	1080
Geochemistry and Tectonic History of Seamount Remnants in the Xingshuwa Subduction Accretionary Complex of the Xar Moron Area, Eastern Margin of the Central Asian Orogenic Belt CHENG Yang, XIAO Qinghui, LI Tingdong, LI Yan, FAN Yuxu, XU Liquan, GUO Lingjun and PANG Jinli	1086
Petrogenesis and Tectonic Implications of Middle Ordovician Ocean Island Basalts from the Chagantaolegai Ophiolitic Mélange in Junggar, NW China CHEN Jiafu, LI Rongyan, MA Haitao, HAN Baofu and LIU Junlai	1099
Cenozoic Crustally-derived Carbonate-rich Magmatic Rocks in West Junggar, North Xinjiang, Western China: Geochronology, Geochemistry and Tectonic Implications CHEN Shi, LIANG Xinxin, ZHANG Yuanyuan, GUO Zhaojie and QI Jiafu	1112
Petrogenesis of Early Carboniferous Alkaline Basalt from the Wusun Mountain: Implications for Tectonic Evolution of the Western Yining Block, NW China WANG Zuopeng, LV Yan, LI Yongjun, LI Hai, ZHOU Yanlong, LI Ganyu and YANG Gaoxue	1128
Petrology and Geochemistry of Some Ophiolitic Metaperidotites from the Eastern Desert of Egypt: Insights into Geodynamic Evolution and Metasomatic Processes Abdel-Aal M. ABDEL-KARIM, Mokhles K. AZER and Shaimaa A. EL-SHAFEI	1139
Formation of Foliations and their Related Minerals from Diagenetic to Medium-grade Metamorphic Rocks: A Case Study of the Hongyanjing and Liao-Ji Backarc Basins, China TIAN Zhonghua, WEN Fei, LIU Fulai, ZHU Haozhong and YE Zhanghuang	1158
Zircon Trace Element Constraints on U-Pb Dating: A Case Study of the Huayuangong A-type Granite in the Lower Yangtze Region, Eastern China QI Fei and YAN Jun	1171
Petrogenesis, Geodynamics and Radioactivity of the Granitic Rocks of the Nugrus Weakness Zone, South Eastern Desert, Egypt Soliman ABU ELATTA Abdallah Mahmoud and Gehad M.R. MANSOUR	1183
Geochemistry and Zircon U-Pb Dates of Felsic-Intermediate Members of the Late Cretaceous Yüksekova Arc Basin: Constraints on the Evolution of the Bitlis-Zagros Branch of Neotethys (Elazığ, E Turkey) Melek URAL, Kaan SAYIT, Osman Ersin KORALAY and Mehmet Cemal GONCUOGLU	1199
Geochemistry of Rhenium and Other Trace Elements in Molybdenite, Sar Cheshmeh Porphyry Cu-Mo Deposit, Iran Behnam SHAFIEI BAFTI, Martin SVOJTKA and Mehdi ABDOLAHI	1217
Re-Os Isotopic Age of Molybdenite of the Jingren Deposit and its Mineralogical Significance of Magnetite, Pyrite and Chalcopyrite CAO Li, YI Liwen, DAI Wei, XIE Binggeng, LI Xiaoqing, LU Anhuai and GU Xiangping	1236
Hydrothermal Zircon Geochronology in the Shangxu Gold Deposit and its Implication for the Early Cretaceous Orogenic	1249

Gold Mineralization in the Middle Bangonghu–Nujiang Suture Zone HUANG Hanxiao, LUOSANG Jiancuo, DAI Zuowen, LIU Hong, FU Jiangang, LI Guangming, CAO Huawen and ZHOU Qing	
Hydrocarbon Generation Characteristics of Source Rocks from Different Saline Environments in the Dongpu Depression,	1260
Bohai Bay Basin, China LI Wendu, ZHANG Pengyuan, JIANG Fujie, ZHANG Yunxian, HUANG Renda, XU Tianwu, ZHOU Yongshui, LI Longlong and JIANG Wenli	
Distribution of Mid-deeply Buried Sand-bodies and their Hydrocarbon Significance at Basin Margins: Case Study of the Paleogene in the Eastern Liuzan Area of the Nanpu Sag, Bohai Bay Basin, China CUI Lijie, JIAN Shikai, ZHANG Boming, XIE Xiongju and LI Liang	1279
Geochemical Characteristics and Migration Pathways of Ordovician Carbonate Oil Reservoirs in the Tuoputai Area, Tarim Basin, Northwestern China LIU Hua, WANG Shen, CHENG Bin, CAO Zicheng and JIANG Ziyue	1295
Shale Gas Reservoir Evaluation by Geophysical Measurements: A Case Study of the Upper Ordovician–Lower Silurian in the Fenggang Block, Northern Guizhou Province XIA Peng, FU Yong, GUO Chuan, YANG Zhen, HUANG Jinqiang and MOU Yuliang	1310
Modeling of the Shale Volume in the Hendijan Oil Field Using Seismic Attributes and Artificial Neural Networks Mahdi TAHERI, Ali Asghar CIABEGHODSI, Ramin NIKROUZ and Ali KADKHODAIE	1322
Paleoearthquake Investigation along the Chenghai Fault Zone since ~500 ka, Southeast Margin of the Tibetan Plateau YANG Shuaibin, QIAO Yansong, WU Zhonghai, ZHANG Xujiao, QI Lin, HE Zexin and LIANG Ying	1332
Coordinated Exploration Model and its Application to Coal and Coal-associated Deposits in Coal Basins of China WANG Tong, SUN Jie, LIN Zhongyue, FANG Huiming, WANG Yue and LIU Yifen	1346
Exploratory Data Analysis Applied in Mapping Multi-element Soil Geochemical Anomalies for Drill Target Definition: A Case Study from the Unpha Layered Non-magmatic Hydrothermal Pb-Zn Deposit, DPR Korea JANG Gwang-Hyok, WON Hyon-Chol, HWANG Bo-Hyon and CHOI Chol-Man	1357
REVIEWS	
Neoproterozoic Tectonic Events of Egypt Mohamed ABD EL-WAHED and Zakaria HAMIMI	1366
RESEARCH ADVANCES	
First Report of Osteoglossiform Fish <i>Huashia</i> from the Cretaceous of Eastern Liaoning, China WU Zijie, GAO Fuliang, QIU Longwei, WANG Haipeng, ZHONG Mishan and GAO Yongzhao	1406
First Record of Soft-shelled Turtle (Testudines, Trionychidae) from the Late Pleistocene of Heilongjiang, Northeast China WU Wenhao, DONG Nan, LI Xiaobo, ZHOU Changfu, FENG Nan and Robert R. REISZ	1409
New Phenotypes of <i>Limnocythere inopinata</i> from Lakes in Badain Jaran Desert, Northern China JIANG Gaolei, ZHAI Dayou, ZHAO Hua, SHEN Jianmei, NIE Zhenlong, LIU Linjing, MAO Xin and WANG Zhe	1411
New Biological Records of Paleoecological Changes Inferred from Pollen Since 2500 cal. a B.P. in the Ebinur Lake Area, North Xinjiang LI Yumei, ZHAO Long, JIANG Hanchao, ZHANG Yun and KONG Zhaochen	1413
New Discovery of Ca. 38 Ma Ultramafic-mafic Dyke Swarms in the Mitizi Area, Northwestern Tibetan Plateau CHAO Wendi, WANG Zuopeng, LI Xiaojun and ZHOU Yanlong	1415
New Discovery of ~1866 Ma High-temperature Mylonite in the Helanshan Complex: Marking a Late-stage Ductile Shearing in the Khondalite Belt, North China Craton QIAO Hengzhong, YIN Changqing, ZHANG Jian, QIAN Jiahui and WU Shangjing	1418
A Quantitative Method for Evaluating Fault Vertical Opening and Sealing Properties during Hydrocarbon-Charging Periods JIANG Youlu, ZHAO Kai and HU Hongjin	1420
¹⁴ C Chronology and Circulation of Potassium-rich Brine in Lop Nur Playa, Xinjiang, Northwestern China LIU Chenglin, JIAO Pengcheng, ZHANG Hua and DUAN Baoqian	1423
Enrichment Patterns and New Discovery of Deep Lacustrine Shale Oil in the Upper Cretaceous Qingshankou Formation, Songliao Basin, NE China	1426
LIU Weibin, XU Xingyou, BAI Jing, LIU Chang, CHEN Shan and LI Yaohua The Enormous Potential of Gas Generation from Carboxylic Acid Salts WANG Qingtao, LIU Wenhui, LI Yining and LIU Jinzhong	1429