地球物理学报 » 2011, Vol. 54 » Issue (10) :2620-2630
地球动力学★地震学★地磁学 最新目录 | 下期目录 | 过刊浏览 | 高级检索 << Previous Articles | Next Articles >>

引用本文:
李勇, 李海燕, 刘慧.石英尾砂对濠河中、下游沉积物磁学性质的影响及其环境意义[J] 地球物理学报, 2011,V54(10): 2620-2630,DOI: 10.3969/j.issn.0001-5733.2011.10.019

LI Yong, LI Hai-Yan, LIU Hui.Magnetic influence of Quartz tail-sands on sediments in the middle and lower reaches of the Haohe River and its environmental implications.Chinese J.Geophys. (in Chinese),2011,V54(10): 2620-2630,DOI: 10.3969/j.issn.0001-5733.2011.10.019

石英尾砂对濠河中、下游沉积物磁学性质的影响及其环境意义

李勇[1], 李海燕[2], 刘慧[1]*

1. 安徽科技学院理学院,安徽凤阳 233100;
2. 中国地质大学(北京) 地质过程与矿产资源国家重点实验室,北京 100083

Magnetic influence of Quartz tail-sands on sediments in the middle and lower reaches of the Haohe River and its environmental implications

LI Yong[1], LI Hai-Yan[2], LIU Hui[1]*

1. College of Sciences, Anhui Science and Technology University, Anhui Fengyang 233100, China;
2. State Key Laboratory of Geological Process and Mineral Resources, China University of Geosciences, Beijing 100083, China

摘要 | 参考文献 | 相关文章

Download: PDF (826KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 为监测石英尾砂对濠河沉积物的影响,采用环境磁学方法进行研究.在濠河中、下游采集了三条典型沉积物剖面,通过详细的岩石磁学参数与SiO_2质量分数($w(SiO_2)$)测量,结果表明濠河中、下游沉积物中的主要磁性矿物是磁铁矿.三条典型沉积物剖面在纵向上按磁性参数曲线的变化特征均可分成四个磁性层,第二、第三、第四层沉积物受石英尾砂稀释作用的影响显著,$w(SiO_2)$的平均值高达80%,这三层沉积物的磁学性质由石英尾砂控制.濠河中、下游沉积物的磁性参数(χ、SIRM和χ_{ARM}) 随$w(SiO_2)$增加而减少,两者存在负相关关系($-0.88 \leqslant R \leqslant -0.81$),表明磁性参数可用于分析石英尾砂对濠河沉积物的影响.同时,沉积物磁性参数的变化也能指示沉积环境的变化.

关键词: 石英尾砂 沉积物 环境磁学 濠河

Abstract: To monitor environmental influences of quartz tail-sands on sediments around the Haohe River, mineral magnetic parameters and SiO_2 content ($w(SiO_2)$) were measured on three representative sedimental in the middle and lower reaches of the Haohe River. The results show that the main magnetic mineral in the sediments was magnetite. These three representative sedimentary sections can be divided into four sub-layers. The second, the third and the fourth sub-layers were more influenced by quartz tail-sands than the first one, with an average value of $w(SiO_2)$ more than 80%. And magnetic property of sediments from the three layers was controlled by the quartz tail-sands. Magnetic susceptibility (χ), saturation isothermal remanence (SIRM) and susceptibility of anhysteretic remanent magnetization(χ_{ARM}) of sediments in the middle and lower reaches of the Haohe River decreased with increasing $w(SiO_2)$, and there was a negative correlation ($-0.88 \leqslant R \leqslant -0.81$) between the concentration of magnetic minerals and SiO_2 content. Therefore, we concluded that magnetic parameters can be used to monitor the influences of quartz tail-sands on sediments. Meanwhile, variations of sediment magnetic parameters might indicate changes of the depositional environment.

Keywords: Quartz Tail-sands Sediments Environmental magnetism Haohe River

Received 2010-09-27;

Fund:

安徽省优秀青年人才基金项目(2010SQRL097),安徽省自然科学一般项目(KJ2010B293)和安徽科技学院重点建设课程项目(AKXK20102-2)联合资助.

About author: 李 勇,男,1975年生,硕士,讲师,主要从事磁学和环境磁学研究.E-mail:liyong197510@163.com

Service
把本文推荐给朋友
加入我的书架
加入引用管理器
Email Alert
RSS
作者相关文章

链接本文:
http://www.geophy.cn/CN/10.3969/j.issn.0001-5733.2011.10.019 或 http://www.geophy.cn/CN/Y2011/V54/I10/2620