地球物理学报 » 2012, Vol. 55 » Issue (12) :4194-4206 doi:10.6038/j.issn.0001-5733.2012.12.031

引用本文(Citation):
祁光, 吕庆田, 严加永, 吴明安, 刘彦.先验地质信息约束下的三维重磁反演建模研究 ——以安徽泥河铁矿为例. 地球物理学报, 2012,55(12): 4194-4206,doi: 10.6038/j.issn.0001-5733.2012.12.031

QI Guang, LV Qing-Tian, YAN Jia-Yong, Wu Minan, LIU Yan.Geologic constrained 3D gravity and magnetic modeling of Nihe deposit —A case study.Chinese J.Geophys. (in Chinese),2012,55(12): 4194-4206,doi: 10.6038/j.issn.0001-5733.2012.12.031

先验地质信息约束下的三维重磁反演建模研究 ——以安徽泥河铁矿为例

祁光[1], 吕庆田[1,2], 严加永[2], 吴明安[3], 刘彦[2]*

1. 吉林大学地球探测科学与技术学院,长春 130026;
2. 中国地质科学院矿产资源研究所, 国土资源部成矿作用与资源评价重点实验室, 北京 100037;
3. 安徽省地质调查院,合肥 230088

Geologic constrained 3D gravity and magnetic modeling of Nihe deposit —A case study

QI Guang[1], LV Qing-Tian[1,2], YAN Jia-Yong[2], Wu Minan[3], LIU Yan[2]*

1. College of Geoexploration Science and Technology, JilinUniversity, Changchun 130026, China;
2. MLR Key Laboratory of Metallogeny and Mineral Assessment, Institute of Mineral Resources, Chinese Academy of Geological Sciences, Beijing 100037,China;
3. Anhui Geological Survey, Hefei 230088,China

摘要 | 参考文献 | 相关文章

Download: PDF (7689 KB) HTML (0 KB) Export: BibTeX or EndNote (RIS) Supporting Info

摘要

安徽泥河铁(硫)矿床是近年发现的大深度隐伏矿床,它的发现再次引发了庐枞地区深部找矿的热潮.建立矿区的三维精细地质模型,对寻找深、边部隐伏矿体,深入认识深部成矿、控矿规律意义重大.本文以泥河矿区为实例,开展先验地质信息约束的三维重磁建模研究,获得了矿区面积5.6 km^2(2.8 km×2.0 km)、深度1.2 km内的三维地质模型.在三维可视化平台上对该模型进行了地质解释,全面分析了矿体、地层与次火山岩之间的空间分布及对应关系,发现铁矿主要赋存于闪长玢岩与砖桥组火山岩之间,且在玢岩穹窿地段矿体厚大,这对认识"玢岩型"铁矿的成矿模式具有重要的实际意义;三维模型的重磁正演响应基本拟合了实际重磁异常,说明在建模区域内已没有新的矿体;本文提出的三维地质建模流程可为其它地区开展类似工作提供借鉴,同时研究表明地质信息约束下的三维重磁建模研究在深、边部找矿和重磁异常的精细解剖等方面具有潜在的价值和广阔的应用前景.

关键词 泥河铁矿, 3D地质建模, 交互反演, 深部找矿

Abstract:

Nihe ore deposit, located in Anhui Province, is deep hidden ore deposit which was discovered in recent years, this finding is the major driving force of deep mineral exploration word in Luzong. Building 3D elaborate geological model has the important significance for prospecting to deep or surround in this area, and can help us better understand the metallogenic law and ore-controlling regularity.This article takes the Nihe iron ore district as an example, a physical property model of the study area has been built by using geologically constrained gravity and magnetic interactive inversion, coving an area of 2.8×2.0 km to depths of 1.2 km, and displayed by using 3D visualization software. The detailed knowledge of the spatial distribution of ore-related and ore-bearing strata has beenanalyzed in the round, which has important practical significance for understanding the metallogenic model of porphyry iron deposit; The results of modeling adequately reproduce the gravity and magnetic field observations, which indicated that there is no ore body in this area.The flow work in this paper provide reference for similar work in other areas; this study shows that the research of geologic constrained 3D gravity and magnetic modeling has potential value and broad application prospect in the aspects of prospecting to deep or surround and the delicate analysis of gravity and magnetic field response.

Keywords Nihe iron ore, 3D geological modeling, Interactive inversion, Deep mineral exploration

Received 2012-07-10;

Fund:

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
祁光
吕庆田
严加永
吴明安
刘彦