Geophysical Prospecting for Iron Ores in China

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Abstract

Experience of thirty more years in some major ascepts of geophysical prospecting for iron ores in China has been sumarized in this paper. Iron deposits in China are grouped and arranged according to their commercial significance as follows: 1-metamorphic, 2-magmatic 3-volcano-sedimentary, 4 skarn, etc. Some of them are small in size, deep seated, multilayered or complex in mode of occurrence. It is for these reasons that geophysical prospecting work and anomaly interpretation sometimes meet much difficulty. At the initial stage only surface magnetic surveys were disorderly and unsystematically conducted on a trial base and in a small scale. At the second stage a number of conventional methods (aeromagnetic, drill hole magnetic and gravimetric surveys) were widely employed and some special methods (including IP) were tested. All geophysical surveys were carried out in a systematic planned way at a regional base. A static magnetic laboratory was established. Accurate measurement of magnetic parameters of rocks and minerals, measurement of susceptibility tensors and studies of magnetic anisotropy of iron ores were undertaken. Data obtained were very helpful in good time to anomaly interpretations. State of the art in magnetic interpretation has been raised to a higher level. Techniques for interpretating flat or complex anomaly curves (i.e.caused by synformal iron formations) are developed. In this paper some examples are cited to illustrate these techniques.

冶金地质锰矿学术讨论会在成都召开

1986年10月16日至20日，中国金属学会冶金地质学会与冶金部地质情报网，在成都市联合召开了冶金地质锰矿学术讨论会。冶金部徐大铨副部长到会作了指示，四川省冶金厅刘杰厅长也讲了话，鼓励冶金地质职工为国家多找富锰，多找优质锰矿。冶金部地质局姚培慧总工程师、冶金地质学会理事长关广岳教授和冶金地质学会的秘书长、理事们参加了会议。

关广岳理事长致开幕词。姚培慧总工程师作了总结报告，指出我国找锰矿正处在蓬勃发展阶段，这次会议理论联系实际，找锰工作必将进一步加强，必将取得良好效果。

参加本次会议的单位48个代表91人，他们是来自冶金、有色、地矿部、矿山、院校的找矿、科研人员和地方代表。提供论文67篇（含摘要），其中，锰矿地质找矿方面的论文38篇，地球物理、地球化学探矿方面的论文9篇，锰矿物质成分研究8篇，有关锰矿石技术加工、资源开发利用的论文12篇，反映了近几年来我国锰矿资源研究的基本成果。

与会代表通过会议了解了当前国内外锰矿找矿研究的动向和我国锰矿现状。我国是一个锰矿资源丰富的国家，探明的储量居世界第三位，锰矿床类型与赋存层位之多为世界所少见。但贫矿多、富矿少，碳酸锰多、氧化锰少，含硅、磷、铁高，锰低，难选，开发利用差。在地理分布上也不均衡，南方占85%。在成矿理论、找矿方法、物质成分研究、应用技术研究、低品位锰矿开发利用等方面还须要做大量工作。

会议反映了三年来找锰矿工作取得的一些新进展：为锰矿床岩相古地理的研究、礁岩成锰规律探讨、层控古风化作用的研究、古构造古地理对成矿的控制作用，贫锰矿区如何找富锰矿，高磷矿区找低磷矿石，浅海成矿与广海成矿研究都取得了许多可喜的成绩。强磁选矿脱磷技术也有了提高。

会议发扬技术民主，认真讨论了我国找富锰与找优质锰矿床的问题。认为，我国锰矿是成带出现的，成矿时代跨度大。在类型上应以沉积型矿床和风化淋滤型矿床为主，兼顾其他；在成矿时代上应抓住震旦纪、泥盆纪、二叠纪、三叠纪和第四纪；在地区上除注意南方各矿带上扩展深入之外，也要注意东北和西北地区找矿，并开拓新的地区。

会议还指出要加强科学研究，组织力量联合攻关，搞好成矿预测，重点研究：①锰矿的成矿条件及富集规律，特别是岩相古地理环境、控矿构造、海底（火山）喷气成矿作用、生物成矿作用、后期改造及风化富集作用的研究；②锰矿床成矿区划、成矿模式和成矿预测的研究；③物化探及遥感地质、数学地质、同位素地质找锰矿的应用研究；④高磷、难选矿石的选矿工艺和综合利用的研究。