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## 青海湖晚更新世沉积物中胶黄铁矿的发现及其环境指示意义

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Identification of greigite in the late Pleistocene sediments of Lake Qinghai and its environmental implications

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摘要

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**摘要** 对青海湖南盆沉积中心钻取的一根长18.6 m的高取芯率沉积岩芯(1F)进行磁化率测试显示,该岩芯在8.15~8.96 m和15.50~17.28 m两沉积段具有非常高的磁化率.详细的岩石磁学测量和矿物分析表明这两段沉积物中有大量的胶黄铁矿存在,其磁畴特征主要以单畴(SD)为主,并显示少量超顺磁(SP)颗粒特征,这是导致磁化率大幅升高的主要原因.胶黄铁矿的生成与硫酸盐还原作用密切相关,1F沉积岩芯中胶黄铁矿的发现表明青海湖在晚更新世具有非常适宜胶黄铁矿生成的硫酸盐还原环境.

**关键词:** 青海湖 湖泊沉积物 胶黄铁矿 岩石磁学 环境磁学

**Abstract:** Lake Qinghai, the largest lake in China, is situated in an important climate-sensitive zone on the northeastern margin of Tibetan Plateau. In this study, the magnetic mineralogy of a late Pleistocene sediment core (1F, 18.6 m long) from the southern sub-basin deposition center of Lake Qinghai was studied using multiple rock-magnetic and non-magnetic measurements. There are two distinct magnetic susceptibility peaks at the depths of 8.15~8.96 m and 15.50~17.28 m. High- and low-temperature magnetic measurements, coupled with scanning electron microscopy (SEM) and energy dispersive X-ray (EDX) analyses, suggest that the sediments from these two intervals contain a large number of single domain (SD) and some superparamagnetic (SP) greigite particles, which is the primary cause for the enhancement of magnetic susceptibility. Greigite particles are mainly formed due to sulfate reduction, an early stage of diagenesis. Therefore, the occurrence of greigite in 1F core implies that the Lake Qinghai could have experienced two intervals favorable for early diagenesis during the late Pleistocene.

**Keywords:** Lake Qinghai Lake sediment Greigite Rock magnetism Environmental magnetism

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