



利用PCR-DGGE技术分析硫化镍矿浸矿体系中的细菌群落演替

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An analysis of bacteria population in nickel sulfide ore bioleaching system by PCR-DGGE

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摘要 浸矿体系中的菌群结构及其演替规律与浸出率具有密切的关系,为了解硫化镍矿浸矿体系中的这种关系以提高浸出率,利用PCR-DGGE(变性梯度凝胶电泳)技术结合16S rRNA基因序列对体系的细菌种群结构进行分析.研究表明,在硫化镍矿浸矿体系中,菌群组成菌属为嗜酸氧化亚铁硫杆菌属(*Acidithiobacillus*),并在浸矿体系中具有明显的演替现象,浸矿体系中的菌株演替和浸出率具有明显的相关性,经过21d的浸出,硫化镍矿的浸出率达到70%,探索浸矿体系中细菌的种群结构及其演替与浸出率的关系,对优化浸出体系菌群组成,提高浸出率具有指导作用.

关键词: 硫化镍矿 生物冶金 嗜酸氧化亚铁硫杆菌 DGGE(变性梯度凝胶电泳)

Abstract: It was reported that the population structure and the succession of bacteria was related to the rate of bioleaching. In order to investigate the relationship in the bioleaching system of the low-grade nickel sulfide ore and then improve the rate, DGGE (denaturing gradient gel electrophoresis) and 16S rRNA gene sequence analysis are used to analyze the bacterial population structure in the leaching system in the shake-flask leaching culture. The results show that the main bacteria population in the bioleaching system is acidophilic *Thiobacillus* and three bands are found by DGGE analysis. The change of DGGE bands indicates the succession of bacteria populations in the bioleaching process. After the bioleaching for 21 days, the rate of bioleaching in low-grade nickel sulfide ore has reached to 70%. Realizing that the bacteria population structure is closely related to the rate of bioleaching could help to optimize the bacteria population structure and improve the rate of bioleaching.

Key words:

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