

عنوان مقاله:

Gold, Silver and Iron in Iron Oxy-hydroxide Precipitate Formed in Process of Acid Mine Drainage

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خلاصه مقاله:

Oxidation of sulfide-containing ores is the main cause of Acid Mine Drainage (AMD), which is an environmental problem associated with both the abandoned and active mines. Iron-bearing sulfide minerals can be oxidized and form mine waters with high sulfate content, low pH, high electrical conductivity, high redox potential, and high concentrations of iron, aluminum, and other heavy metals. In the process of AMD, precipitation of poorly crystallized oxy-hydroxides of iron with a large active surface can occur. On the surface of iron oxy-hydroxide, the precipitated particulate matter, anions, and cations (metals) could be adsorbed. Mine waters can contain a certain amount of precious metals that can also be adsorbed onto an iron particulate matter surface, which is investigated in this research work. In this work, the samples of iron oxy-hydroxide particulate matter at abandoned gold mine waste in Bakovići (Central Bosnia and Herzegovina) are used. Several parameters including pH, water content, particle size distribution, sulfate content, electrical conductivity, redox potential, and amounts of gold, silver, and iron are measured on the selected mine waste samples. The results obtained indicate that significant amounts of gold (average: ۶.۸ mg/kg) and silver (average: ۷.۱۳ mg/kg) are present in the iron precipitate. Adsorption of precious metals onto the iron oxy-hydroxide surface is strongly pH-dependent. At a very low pH value, desorption of precious metals is favorite. Thus, precious metals are only partially adsorbed onto the iron oxy-hydroxide surface

کلمات کلیدی:

AMD, mine, Iron, Gold, silver

لینک ثابت مقاله در پایگاه سیویلیکا:

