

Acid Mine Drainage Remediation Using Silane and Phosphate Coatings

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Abstract : Acid mine drainage (AMD) one of the main pollutants of water in many countries that have mining activities. AMD results from the oxidation of pyrite and other metal sulfides. When these metals gets exposed to moisture and oxygen, leaching takes place releasing sulphate and Iron. Acid drainage is often noted by 'yellow boy,' an orange-yellow substance that occurs when the pH of acidic mine-influenced water raises above pH 3, so that the previously dissolved iron precipitates out. The possibility of using environmentally friendly silane and phosphate based coatings on pyrite to remediate acid mine drainage and prevention at source was investigated. The results showed that both coatings reduced chemical oxidation of pyrite based on Fe and sulphate release. Furthermore, it was found that silane based coating performs better when coating synthesis take place in a basic hydrolysis than in an acidic state.

Keywords : acid mine drainage, pyrite, silane, phosphate

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