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# Effect of sulfate and chloride salts on coal biodesulfurization process employing acidophilic bacteria

**Duarte Paola, Caicedo Gerardo** and **Márquez Marco**
National University of Colombia, Colombia

Reducing sulfur from coal before combustion seeks to limit the amount of pollutant SOx gases emitted to the atmosphere. Among the different kinds of coal desulfurization, biological processes have many economic and environmental advantages in comparison to chemical and physical processes. Among the different important parameters to develop a profitable process, sulfate precipitates (as jarosite) on the surface of mineral should be avoided because it affects the mass transfer in the process. The present work evaluated the behavior of two cultures, a pure strain (Acidithiobacillus ferrooxidans) and a consortium (A. ferrooxidans and A. thiooxidans), in coal biodesulphurization processes for five different culture media, three based on sulfate salts and two based chloride salts. Coal (particle size < 0.25mm) came from the "Guacamaya" mine (Córdoba, Colombia). All the experiments were monitored by chemical measurements of pH, redox potential, iron, pyrite and cell concentration, and mineralogical analyses of X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR) and Scanning electron microscopy (SEM). The assays revealed the both cultures were capable to carry out the process by using low concentrations of nutrients and without a magnesium source. All assays obtained a pyrite oxidation around 80% after 15 days of the process. However, the assays using sulfate medium had the lowest sulfate precipitation, agreeing with the found in previous researches reported in the literature.

## Biography

Duarte Paola is a biological Engineer currently pursuing a Master of Science- Biotechnology at the National University of Colombia. She is a Researcher of Bioprocess and Applied Mineralogy Group (GMAB) of this university, and she has published a paper in the Colombian Magazine of biotechnology.

pgduarte@unal.edu.co