

## **Selective froth flotation concentration of antimonite ore from a mixture of antimony, lead and arsenic ores**

### **Abstract**

Mineral ore beneficiation and value addition has become a key factor for economic growth in Africa. Froth flotation process is used to concentrate relatively low grade ores. In Zimbabwe antimonite is mined together with lead and arsenic which are regarded as contaminants and hence the need to selectively remove them. We report on the selective concentration of antimonite at the expense of lead and arsenic by use of a depressant. Starting with an containing antimony (5.89%), lead (0.34%) and arsenic (0.25%) a concentrate containing antimony 30.68%, lead 1.52% and arsenic 0.85% was obtained without an depressant in a Devnver flotation cell. The addition of a depressant resulted in a concentrate with antimony 24.89%, lead 0.90% and arsenic 5.89%. The Flame Atomic Absorption Spectroscopy (FAAS) and X-Ray Florescence (XRF) analytical techniques were used to measure the changes in concentrations of antimony, lead and arsenic during this research.