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## Investigation of the fundamental interactions of the PtSb<sub>2</sub> Surface with the MBTK molecule

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Collectors play a key role in determining a minerals floatability behaviour. Variations in chain length have a specific effect on xanthate collectors, which continue to be the most versatile collector for the bulk of minerals, this leads to better recovery rates. This study investigates adsorption energies, bonding behaviour and the interaction of the mercaptobenzothiazole (MBTK) with the platinum antimony mineral surfaces: (100), (110) and (111) surfaces. Following the three surfaces optimization, we identified the most stable surface and calculated the adsorption energy. We found that the most exothermic was the (110) surface with a greater adsorption energy of -6.932 kJ/mol, the (100) surfaces produced an adsorption energy of -6.838 kJ/mol and the (111) surface produced an adsorption energy of -0.365 kJ/mol thus shows that the (MBTK) molecule was mostly preferred on the (110) surface.

### Apply to be considered for a student ; award (Yes / No)?

Yes

### Level for award;(Hons, MSc, PhD, N/A)?

Hons

**Primary author:** Mr NDHLOVU, ivyn (university of Limpopo)

**Co-authors:** Prof. NGOEPE, Phuti (University of Limpopo); Dr MANGWEJANE, Seshupo (University of Limpopo); Dr MKHONTO, Peace (University of Limpopo)

**Presenter:** Mr NDHLOVU, ivyn (university of Limpopo)

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