

## **Jeff Malongwe**

### **Abstract**

Ozonation reaction kinetics of representative hydrocarbons, 1,1-diphenylethylene (DPE), and polycyclic aromatic hydrocarbons (PAHs), at the air-ice interface and different temperatures were studied. The results indicate that ozonation reactions are faster at lower temperatures due to a more efficient displacement of the molecules to the ice surface. The reaction between ozone and an ice surface-bound hydrocarbon can be described by the Langmuir – Hinshelwood model. The UV – visible diffuse reflectance and fluorescence spectroscopies of phenol and anisole at the air – ice interface were investigated. The experimental results as well as DFT calculations provided evidence for the occurrence of the ground and excited state associates. At higher concentrations, formation of crystals is not excluded.