

FURTHER STUDIES OF THE BORATE FUSION METHOD OF SAMPLE PREPARATION

Maggi Loubser^a, Peet H van Rooyen^b and Johan PR de Villiers^c.

^aX-ray Analytical Facility, Geology Department, University of Pretoria, Pretoria, 0002, South Africa. E-mail: maggi.loubser@up.ac.za

^bDepartment of Chemistry, University of Pretoria, Pretoria, 0002, South Africa. E-mail: phvr@up.ac.za

^cDepartment of Materials Science and Metallurgical Engineering, University of Pretoria, Pretoria, 0002, South Africa. E-mail: jpdev@postino.up.ac.za

This paper is a summary of a study conducted to identify and elucidate the reactions occurring in the formation of a lithium borate glass, but also between the lithium borate and oxides during glass formation. Thermo Gravimetric Analysis and Differential Thermal Analysis were used to evaluate the reactions occurring during the fusion of lithium borate glasses, and at a later stage, oxide/flux mixtures. During the TGA analysis certain reactions were observed and to investigate these similar samples were prepared in a muffle furnace and analysed by X-ray Powder Diffraction and Raman Spectroscopy.

The results presented will include some elucidation of the fusion process and some methods to deal with difficult to fuse materials will be presented.