

## **LOPARITE IN THE LOVOZERO MASSIF, KOLA PENINSULA, RUSSIA: EVIDENCE FOR HIDDEN LAYERING IN GIANT PERALKALINE INTRUSION.**

<sup>1</sup>L. N. Kogarko, L. N., <sup>2</sup>Williams, C.T. and <sup>2</sup>Woolley, A. R. <sup>1</sup>Vernadsky Institute of Geo-chemistry, Moscow, Russia; <sup>2</sup>Natural History Museum, London, UK

Lovozero, the largest of the world's layered peralkaline intrusions, includes gigantic deposits of Nb + REE-loparite ore. Loparite became a cumulus phase after crystallisation of about 35% of the ore-bearing 'Differentiated complex', and its chemical evolution has been investigated through a 2.35km section of the intrusion. The composition of the cumulus loparite changes systematically upwards through the intrusion with an increase in Na, Si, Nb and Th and decrease in REE and Ti. This main trend of loparite evolution reflects differentiation of the peralkaline magma through crystallisation of 1600m of the intrusion. The formation of the loparite deposits, which are situated in urtite layers, was the result of several factors including the chemical evolution of the highly alkaline magma and mechanical sedimentation of loparite at the base of the convecting unit. At later stages of evolution, when concentrations of alkalis and volatile components reached very high levels, loparite reacted with the residual melt to form a variety of minerals including lamprophyllite, lomonosovite, steenstrupine, vuonnemite, nordite, nenadkevichite, REE,Sr-rich apatite, vitusite, lovchorrite, monazite, cerite and Ba,Si-rich belovite. The absence of loparite ore in the «Eudialyte complex is a result of the wide crystallisation field of lamprophyllite, which here became a cumulus phase.