

Mineralogical Society Postgraduate Student Travel Bursary Report

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*Heterogeneity in the Sudbury Impact Melt Sheet and Implications for Ni-Cu-PGE Ore Forming Processes*

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I would like to thank the Mineralogical Society for their financial support, which enabled me to attend the 2009 Joint Assembly in Toronto. This large annual meeting brings together numerous scientific organisations, and was attended by more than 3000 delegates from a wide range of disciplines. As such I was able to learn of recent advancements in a broad spectrum of sessions relevant to my research interests, ranging from technical advancements in geochronology and isotope geochemistry to the formation of magmatic sulphide ore systems.

These sessions have inspired new avenues for my own research, which focuses upon the utilisation of isotope geochemistry to track the magmatic evolution of the largest terrestrial impact melt sheet, in Sudbury, Ontario. Impact melts from a single crater have long been considered to be homogenous, reflecting mixing during their extremely violent birth. However by mapping Pb isotope variations we have shown that significant heterogeneity is preserved in the Sudbury impact melt sheet on a number of scales. These findings have important implications for impact melting models, our understanding of the evolution of melt sheets and, more specific to Sudbury, the formation of sulphide ore deposits.

I presented these findings within the session "Terrestrial Impact Structures; Cratering Processes, Mineral Resource Deposits, and Environmental Consequences". The session was very interesting and varied, reflecting the

increasing awareness of the importance of impact processes to a number of areas of the Earth's history. I received some excellent feedback on my talk and have subsequently discussed potential future collaborative projects with a number of other researchers.

This was my first major conference and was a very enjoyable and productive experience, made possible by the support of the Mineralogical Society.

James Darling