

**SUMMARY OF GSA 2016 SESSION T39: ‘GO SMALL OR GO HOME: MICROBEAM TECHNIQUES APPLIED TO IGNEOUS, METAMORPHIC, AND SEDIMENTARY PETROLOGY OF EARTH AND PLANETARY MATERIALS’.** A.K. Souders<sup>1</sup> and P.J. Sylvester<sup>1</sup>, <sup>1</sup>Department of Geosciences, Texas Tech University, Lubbock, TX 79409 (kate.souders@ttu.edu; paul.sylvester@ttu.edu)

**Introduction:** Recent advances in in-situ analytical methods (e.g EPMA, SEM/TEM, EBSD, SIMS, LA-(MC)-ICPMS) have inspired new method development and applications for Earth and planetary geochemistry. Unlike traditional bulk geochemical approaches, in-situ measurements provide chemical and isotopic compositions of particles and minerals down to the sub-micron levels while, in some cases, preserving the petrographic relationships between phases. These geochemical measurements enable us to gain a better understanding of the magmatic and metamorphic histories of planetary crusts, sedimentary provenance, diagenesis, impact processes, and nucleosynthesis and stellar evolution.

This presentation will provide a summary of the 2016 Geological Society of America Annual Meeting topical session ‘Go Small or Go Home: Microbeam Techniques Applied to Igneous, Metamorphic, and Sedimentary Petrology of Earth and Planetary Materials’. Particular emphasis will be placed on the latest technology developments and applications that provide new observations and/or improved data quality for a wide range of Earth and planetary materials.