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Evaluation of the methodologies in Seebeck coefficient metrology JOSHUA MARTIN, National Institute of Standards and Technology — The continued development of new thermoelectric materials for high temperature power conversion applications requires reliable and accurate characterization of the electrical and thermal transport properties. The Seebeck coefficient is a useful physical property in evaluating the potential performance of these thermoelectric materials, as it is sensitive to the electronic structure. However, the deceptive simplicity of measuring the Seebeck coefficient has led to the implementation of non-ideal practices that have further complicated the inter-laboratory confirmation of reported high ZT materials. To address these challenges, we have developed an improved thermoelectric probe to evaluate and compare these different characterization methodologies and arrangements. This talk will provide an overview of our apparatus design and instrumentation, with emphasis on the techniques required to effectively manage uncertainty in high temperature Seebeck coefficient measurements.

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