

Abstract Submitted
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Strategies for developing optimal thermoelectric metrology protocols JOSHUA MARTIN, National Institute of Standards and Technology — The Seebeck coefficient is an essential physical property routinely measured to evaluate the potential performance of new thermoelectric materials. These materials facilitate the inter-conversion of thermal and electrical energy and are useful in power generation or solid-state refrigeration applications. However, the diversity in Seebeck coefficient measurement techniques, conditions, and probe arrangements has resulted in conflicting materials data, further complicating the inter-laboratory confirmation of reported higher efficiency thermoelectric materials. In an effort to identify optimal thermoelectric measurement protocols, we have developed a complimentary strategy to both evaluate and compare these different probe arrangements and measurement methodologies: first, through the design of an innovative experimental apparatus, and second, through error modeling of Seebeck coefficient measurements using finite element analysis. This talk will include a discussion of key measurement challenges, example diagnostics, and recommended practices to effectively manage uncertainty in Seebeck coefficient measurements.

Joshua Martin
National Institute of Standards and Technology

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