

Abstract Submitted
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Embedded optical gauges for dynamic temperature measurements¹ DANIEL DOLAN, TOM AO, Sandia National Labs — While mechanical diagnostics are common in dynamic compression research, accurate temperature measurements remain elusive. The problem is particularly acute in ramp-compression experiments, where temperatures are often well below 1000 K, a challenging domain for optical pyrometry. Embedded electrical gauges can be used to measure temperature in limited circumstances, but are difficult to incorporate into metal samples or magnetically-driven experiments. Embedded optical gauges may provide a viable temperature diagnostic when pyrometry and electrical gauges are impractical. Unlike pyrometry, where each sample has a unique emissivity, embedded optical gauges reference temperature to the optical properties of a standard material. Active optical measurements also provide direct control over the measured light levels, whereas pyrometry is limited by sample emission in particular spectral regions. This presentation will discuss the use of noble metal reflectivity gauges for dynamic temperature measurements.

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