

# **Investigation Into The Seebeck Coefficient in Two-Layer Assembly During Laser Short-Pulse Heating**

Yilbas, Bekir S. and Kassas, M. (2005). Japanese Journal of Applied Physics, 44 (8). pp. 6068-6074.

## **Abstract**

The Seebeck coefficient in a substrate varies with electron temperature such that it increases with increasing temperature. The Seebeck coefficient for different materials differs even though the materials have similar thermal properties. In this study, the Seebeck coefficient in a two-layer assembly exposed to laser short-pulse heating is considered. The assembly consists of gold and copper, and the gold layer is situated on top of the copper. In order to investigate the change in the Seebeck coefficient with layer thickness, three different thicknesses of gold layer are accommodated in the simulations. An abrupt change in the Seebeck coefficient occurs across the layers, despite the smooth decay of electron temperatures in this region due to the similar thermal properties of the layer materials. Consequently, the Seebeck coefficient variation across the layers can form the basis for measurement of layer thickness.