LASER-INDUCED INCANDESCENCE MEASUREMENTS OF SILICON AND COPPER NANOPARTICLES: SPECTROSCOPIC MODEL

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ABSTRACT. Interpreting laser-induced incandescence (LII) measurements on synthetic nanoaerosols requires a spectroscopic model that relates spectral incandescence to the temperature of the laser energized nanoparticles. We present models for molten silicon and copper nanoparticles, which are evaluated through extinction and incandescence measurements on nanoaerosols. Measurements on molten silicon nanoparticles are consistent with the Drude model, while molten copper nanoparticles do not show the expected features associated with an interband cutoff at approximately 2 eV.