Profiling Laser-Induced Temperature Fields

for Superconducting Materials Using

Mathematical Experimentation

Moses E. Emetere∗

Covenant University, Canaan Land, 112272 Ota, Nigeria

DOI: 10.2514/1.T4407

The equations of energy balance and heat conductivity are queried by introducing known parameters using virtual

mathematical experimentation. Distribution of temperature by layers in depth for samples of superconducting

material is obtained under different conditions. The structural defect at different state-liquid and solid was analyzed.

The theoretical model generated was validated by experimental data. The temperature distribution under the

irradiating laser intensity (0.45 W) shows an effective decay rate probability density function that is peculiar to the