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Photoacoustic technique for monitoring the thermal properties of porous silicon

Opt. Eng. 36, 343 (1997); <http://dx.doi.org/10.1117/1.601207>

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The use of the photoacoustic technique to monitor the thermal properties of materials that can be obtained only as parts of multicomponent samples is illustrated by performing the thermal characterization of two porous materials: porous silicon obtained from *n*-type crystalline silicon through the spark process and that obtained through the electrochemical etching method. This nonseparative, and hence nondestructive, approach makes use of an effective thermal diffusivity treatment based on the analogy between thermal and electrical resistances, in combination with simplified compositional models for the corresponding multicomponent systems. The thermal parameters obtained are in agreement with existent studies concerning the composition of these materials. This approach offers the possibility of performing the thermal characterization of other porous semiconductors and analogous materials. © 1997 Society of Photo-Optical Instrumentation Engineers.

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