Contribution ID: **255** Contribution code: **S07-OP-202**   Type: **Poster presentation**

Evaluation of Thermophysical Properties of Semiconductors by Photoacoustic Phase Neural Network

Monday, 29 August 2022 18:00 (1h 30m)

The idea of this paper is to develop a method for determination thermal diffusivity, linear expansion coefficient and thickness of a semiconductor sample from photoacoustic phase measurement by using neural network. The neural network has been trained on a large basis of photoacoustic phases obtained from a theoretical Si n-type model in the range of 20Hz to 20kHz. The advantages of using a phase neural network with high accuracy and precision in prediction depending on the number of epochs are presented, as well as analyzes of the application of random Gaussian noise to the network in order to better predict the experimental photoacoustic signal. An analysis of a theoretical photoacoustic model with a phase neural network is demonstrated.

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Session Classification: Poster session

Track Classification: Scientific Sections: S07 Optics and Photonics