

Fluorescence-based temperature control applied to microwave heating: The role of spectral parameters

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In this work, we used an aqueous solution of the thermosensitive dye rhodamine 6g for contactless control of heating in a microwave oven. Temperature dependence of spectral parameters in the range of 20-100 °C, measured using a conventional contact heater. Relative intensity, peak wavelength, spectral bandwidth, and asymmetry coefficient exhibit approximately the same temperature sensitivity at the optimum dye concentration. The data obtained was used to monitor the temperature in real time during the rapid heating of the aqueous solution in the microwave. It is shown that the simultaneous control of several parameters can facilitate the identification of non-thermal effects of microwaves.

Topics

Session A. Physics of condensed matter and spectroscopy

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