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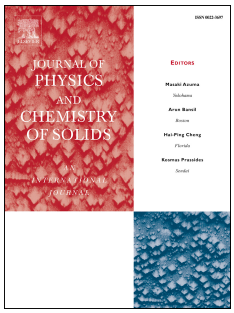

Universality of Meyer-Neldel Compensation rule (MNCR): Case study of thermally assisted a.c. conduction after laser irradiation

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Universality of Meyer-Neldel Compensation Rule (MNCR): Case study of thermally assisted a.c. conduction after laser irradiation

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Abstract

In the current article, the influence of four different cw-lasers on the thermally activated a.c. conduction of a novel quaternary chalcogenide glassy semiconductor $Se_{72}Te_{20}Sn_2Cd_6$ has been reported at different audio frequencies. We have used four different laser sources of wavelengths lying in UV-Vis-IR region. The variation of a.c. conductivity with temperature obeys the Arrhenius relation for all the four laser light sources. Further analysis confirms that pre-exponential factor of thermally governed a.c. conduction and the activated energy involved in the phenomenon follows MNCR. It is also found that this correlation remains independent of laser wavelength.

Keywords: Amorphous materials; Laser processing; a.c. conductivity; Meyer-Neldel Compensation.

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