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Investigating the coumarin capability in chalcogenide $20TI_2Se$ –$80Pr_2Se_3$ system based photovoltaics

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Abstract

Chalcogenide films containing various contents of coumarin (CO) are deposited on the p-type Si substrates. Al/coumarin doped chalcogenide films/p-Si contact exhibits a rectifying behavior. The electrical and photoresponse properties of the prepared diodes are characterized by current and capacitance measurements under various illumination intensities. The addition of coumarin to TI_2Se–Pr_2Se_3 significantly affects the characteristic parameters of diodes. Kohlrausch function is used as an appropriate way to obtain the photo charge density (ρ_{ph}) and the relaxation time constant from the photocurrent/capacitance transients. It is shown that coumarin doped chalcogenide films have a potential to obtain the photocarrier generation.

Keywords: chalcogenide films, coumarin, heterojunction, light-sensing

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