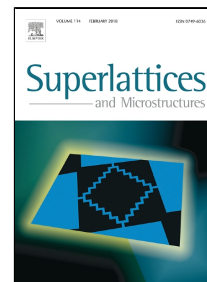


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Mohamed Al-Fandi, Yahia F. Makableh, Mohammad Khasawneh, Rabi Rabady



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Near Zero Reflection by Nanostructured Anti-reflection Coating Design for Si Substrates

Mohamed Al-Fandi,^{a,*} Yahia F. Makableh,^a Mohammad Khasawneh,^a Rabi Rabady

^aJordan University of Science and Technology, Nanotechnology Institute, Irbid, Jordan, 22110

Abstract. The nanostructure design of near zero reflection coating for Si substrates by using ZnO Nanoneedles (ZnONN) is performed, and optimized for the visible spectral range. The design investigates the ZnONN tip to body ratio effect on the anti-reflection coating properties. Different tip to body ratios are used on Si substrates. Around zero reflection is achieved by the Nanoneedles structure design presented in this work, leading to minimal reflection losses from the Si surface. The current design evolves a solution to optical losses and surface contamination effects associated with Si solar cells.

Keywords: Si solar cells, anti-reflection coating, superhydrophobicity, Nanoneedles, ZnO, Design.

*Mohamed Al-Fandi, E-mail: mohamed_alfandi@just.edu.jo

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