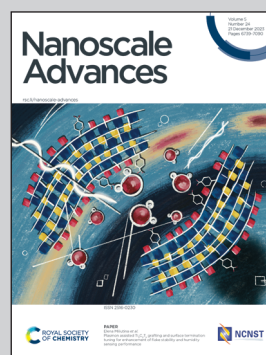


Showcasing research from Professor Ahmed Zubair's laboratory, Department of Electrical and Electronic Engineering, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh.

Ultra-broadband near-perfect metamaterial absorber for photovoltaic applications

To overcome the Shockley-Queisser limit and tandem cells' tunneling effect, we proposed an ingenious double-grating metamaterial-based ultra-broadband absorber consisting of AlGaAs-Ge-GaAs on a titanium film operating in the visible to infrared wavelength regime. The performance analysis of our proposed structure as an absorber layer of a solar cell revealed its high-power conversion efficiency of 31.7% with an excellent short-circuit current density of 47.1 mA cm^{-2} for AM 1.5 G solar irradiance.

As featured in:



See Ahmed Zubair *et al.*,
Nanoscale Adv., 2023, **5**, 6858.