Title: The transparent Schottky junction of reduced graphene oxide/SnO2 nanoarrays towards enhanced broadband photoresponse

Abstract: The rGO/SnO2 nanoarrays (rGO/SnO2 NAs) Schottky junction is synthesized by a series of RF magnetron sputtering, hydrothermal and electrochemical deposition. The unique transparent junction exhibits the broadband photoelectric responses from the ultraviolet to visible light. Additionally, the transparent device reveals brilliant rectifying property because of built-in electric field, which can improve the separation of the photon-generated carriers. As shown, the proper rGO/SnO2 NAs display highly transparency of about ~60% and dramatically enhanced photoelectric conversion of about ~100 times than that of the initial Schottky junction. Finally, the mechanism of the Schottky junction is investigated by the electrical tests and energy band structures.