# Renewable Energy from a Neglected Photovoltaic Material: Boron Arsenide

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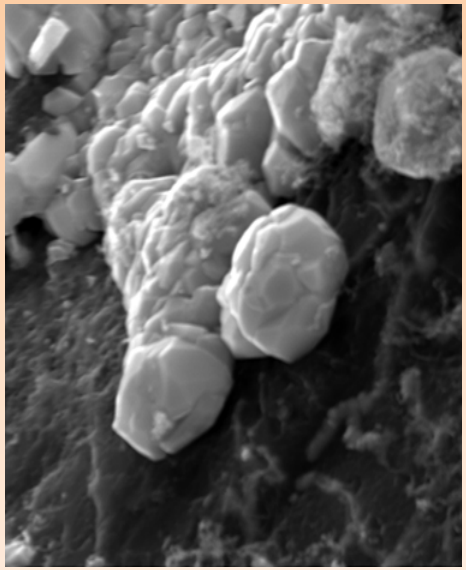
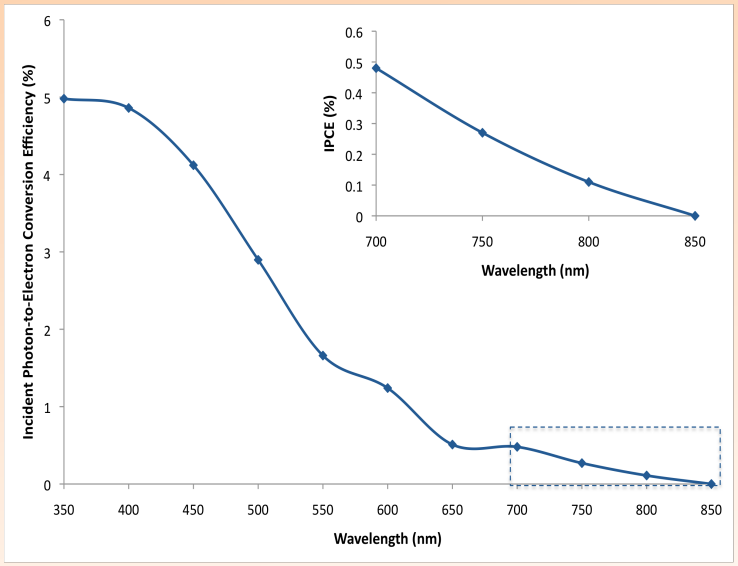
A p-type boron arsenide photoelectrode was prepared from a material consisting of a thin layer of boron arsenide on a boron substrate. The electrode was found to be photoactive under both visible and UV-visible light irradiation and displayed a photocurrent of approximately 0.1 mA/cm$^2$ under UV-visible light irradiation at an applied potential of -0.25 V *vs.* Ag/AgCl. Mott-Schottky plots were obtained for this boron arsenide electrode and displayed an estimated flat-band potential near the onset photopotential. The estimated indirect band gap, as determined from incident photon-to-electron conversion efficiency plots, is 1.46±0.02 eV.



SEM images reveal the surface and core structure of the boron arsenide containing material prepared from granular boron




IPCE from the BAs crystal calculated from the net photocurrent in a 0.1 M $Na_2SO_4$ containing 0.01 M methyl viologen at -0.25 V *vs*. Ag/AgCl.