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Nitrogen doping into ZnO branched nanowire by plasma treatment and its effect on photo electrochemical performance

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Photoanode of ZnO branched nanowires, BNW, doped with nitrogen was fabricated to be used in photochemical cell for hydrogen generation from water splitting process. ZnO BNW was first synthesized by hydrothermal method. Followed by two experimental groups, time controlled DC glow discharge plasma treatment, and time controlled DC magnetron plasma treatment to optimize nitrogen doping into nanowire structure. Via X-ray photoelectron spectroscopy (XPS) results, nitrogen distribution into BNW and N atomic percentage were demonstrated. XPS studies confirm nitrogen distribution into ZnO BNW as N substitution at O sites of ZnO nanowires and as well-screened molecular nitrogen. The morphologies and structure of fabricated nanostructures were investigated by field-emission scanning electron microscope and XRD respectively. Photo anode performance exhibited from photo-electrochemical studies that demonstrated upon dark and illumination at various power densities. It was found that increasing N contain into ZnO BNW lead to increase photocurrent on PEC.

Biography

Shrok Allami is ascientific researcher in ministry of science and technology/ renewable energy directory/ department of hydrogen and biofuel. She has completed her PhD at 2007 from University Technology, Iraq. He has published more than 22 papers in reputed journals, participates at more than 15 national and international conferences as researcher and at their comities, and has been serving as an editorial board member in Iraqi scientific journals.

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