

Abstract Submitted
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Structural Properties and Electrochemical Performance of ZnO Nanosheets Grown Directly on Al substrate by Chemical Bath Deposition Techniques AHMED AL-ASADI, Department of Physics, Southern Illinois University Carbondale, Carbondale, IL 62901, United States, ROBERTO FERRERA, Department of Chemistry and Biochemistry, Southern Illinois University Carbondale, Carbondale, IL, 62901, United States, LUKE HENLEY, Department of Physics, Southern Illinois University Carbondale, Carbondale, IL 62901, United States, NESTOR LOPEZ, VICTOR CAROZO, ZHONG LIN, MAURICIO TERRONES, Department of Physics and Center for 2-Dimensional and Layered Materials, The Pennsylvania State University, University Park, PA 16802, United State, SAIKAT TALAPATRA, Department of Physics, Southern Illinois University Carbondale, Carbondale, IL 62901, United States — We will report on the synthesis & electrochemical characterization of 2-dimensional zinc oxide grown directly on Al substrate by a simple chemical bath deposition method at low temperature (below 100⁰C). Detail structural characterizations of the synthesized ZnO sheets will be presented and discussed. The electrochemical performances of electrochemical double layer capacitors (EDLC) on electrodes fabricated using these materials were evaluated using cyclic voltammetry, galvanostatic charge-discharge, and electrochemical impedance spectroscopy using various electrolytes. We found that high specific capacitance values (greater than 300 F/g) could be achieved using an aqueous electrolyte. The aforementioned results indicates the possibly for using 2-D ZnO architectures fabricated by this simple and cost efficient technique for future electrochemical energy storage devices.

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