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A comparative study of potentiostatic and pulsed Electrodeposition of ZnS nanostructures

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Abstract : Electrochemical, structural and optical properties of ZnS thin films deposited by either potentiostatic or pulsed electrodeposition were investigated. The grown thin films of ZnS from the both processes were studied by means of Mott-Schottky (MS), AFM, XRD, Raman and UV-Vis spectrometry. The deposits of ZnS were grown using an aqueous solution containing 10-3M Na2S2O3 and 10-4M ZnSO at pH=2,4. The electronic properties using Mott-Schottky confirm the n type conductivity, the AFM shown a strongly changement on the surface of the obtained film for both method. The XRD and Raman show that the deposited films are polycrystalline in nature and crystallize with blende structure in both processes, while the optical properties of the deposited ZnS thin films have a band gap equal to 3.5eV.

Keywords : ZnS, Mott-schottky, pulse, potentiostatic, XRD