PREPARATION AND CHARACTERIZATION OF COPPER (II) OXIDE NANOLAYER

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In recent years, nano-oxides layer were prepared for various applications by different method. They have unusual and strong physical and mechanical properties. Much interest focuses on the use of nano-layer copper oxide for optical use. In sol-gel method, copper oxide nanolayers have intense light absorption in wavelength of 400-700 nm. Absorption in rang of visible has very applications, for example, they are used in solar for light absorption from sun. Besides, copper oxide nanolayers prepared by sol-gel, have able to use in gas sensors due to high porosity. If they are compounded with zinc oxide, gas sensor efficiency will increase.

Here, we report on the preparation and characterization of CuO nanolayer by using the sol-gel technique. The precursor for sol preparation was copper chloride, copper acetate monohydrate and polyvinyl alcohol used as a solvent in various environments. Temperature (300-600 c), time, and atmosphere of heating were changed for finding role of them in structural, optical and electrical properties of CuO nanolayer. For the characterization of the obtained nanolayers, X-ray diffraction, SEM, and AFM were used. Optical properties of nanolayer was measured by UV-Visible absorption spectroscopy are also discussed. With varying heat treatment band gap energy will be changed.

References:

[1] S. C. Ray, Solar Energy Materials & Solar Chemistry and Physics, **83** (2004) 307-312.

[2] R. Boucher, J. Physic and Chemistry of Solids, **66** (2005) 1234-1239.