

NANOSTRUCTURED WO₃-SnO₂ THIN FILMS FOR Propan-2-ol SENSING

Nihal¹, Rahul Sharma¹, Sonal Rattan¹, Manpreet Kaur¹, Mamta Sharma^{1,*},
S K Tripathi² and J K Goswamy¹

¹ Department of Applied Sciences (Physics), UIET, Panjab University, Chandigarh -160 014

² Department of Physics, Panjab University, Chandigarh -160 014

* Corresponding author

ABSTRACT

Now days the pollution due to various volatile organic compound (VOC) is alarming owing to their wide usage in various products such as paints, cosmetics, building materials, etc. One such VOC is Propan-2-ol, which is a colorless, flammable organic compound with a pungent smell. It has a variety of application in commercial and household products such as in disinfectant, antiseptics, sanitizer, solvent, laboratory reagent and detergents. The long time exposure of propan-2-ol may leads to several health hazards such as low blood pressure, nausea, dizziness and coma. Being a highly inflammable compound, its leakage can result in serious accident. There is a need to detect and monitor propan-2-ol. Due to advancement in nanotechnology in the field of sensing it become very easy to detect various hazardous substances with great efficiency. In this present work, we synthesized WO₃-SnO₂ nanocomposite by solid hydrothermal route. The prepared nanocomposite was investigated for its various characteristic properties. The optical characterization has been done by UV/Vis spectroscopy. The FTIR spectroscopy has been used to confirm the chemical bonding of WO₃ and SnO₂. The XRD and FESEM have been used to investigate the structural and morphological characteristics of as prepared nanocomposite. The sensing properties have been studied using the electrical properties of prepared nanocomposite. The optical and structural characterization confirms the formation of WO₃-SnO₂ nanocomposite. The sensitivity has been calculated from the I-V characteristics of WO₃-SnO₂ nanocomposite.

Keywords: Metal oxide; Propan-2-ol; Sensing; WO₃-SnO₂.

