

Characterization OF CuPcTs/PS for NO₂ gas sensor

Porous silicon can be considered as a silicon crystal having a network of voids in it. The nano sized voids in the bulk silicon result in a sponge-like structure of pores and channels surrounded by a skeleton of crystalline Si nano wires. Porous silicon (PS) is gaining scientific and technological attention as a potential platform mainly for its multifarious applications in sensing and photonic devices (Pavesi & Dubos; 1997; Tsamis et al., 2002; Archer & Fauchet, 2005; Barillaro et al., 2003)[1-4] The extremely large surface to volume ratio (500m²/cm³) of PS, the ease of its formation, control of the surface morphology through variation of the formation parameters and its compatibility to silicon IC technology leading to an amenability to the development of smart systems-on-chip sensors have made it a very attractive material [5]. Due to these multifunctional applications of PS, recently it has been proposed to be an educational vehicle for introducing nanotechnology and inter-disciplinary material science by eminent scientists working in this field. Therefore passivation of surface is necessary to make stable porous silicon based devices. For that purpose substituting surface hydrogen by another chemical species has appeared desirable. Oxidations (Rossi et al, 2001; nitradation (Anderson et al., 1993) and halogenation (Lauerhaas & Sailor, 1993) are found to be useful for PS surface passivation [6-8]. Derivatisation by organic groups and polymer (Lees et al. 2003; Mandal et al. 2006)[9, 10]. The importance of environmental gas monitoring is well understood and much research has focused on the development of suitable gas-sensitive materials. Recently ...