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Implementation of an instrumentation amplifier on a double sided PCB using various plating techniques

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An instrumentation amplifier is designed and the process of laying it on the printed circuit board is carried out. Preparation of printed circuit board and implementation of an instrumentation amplifier on printed circuit boards is performed using silver as a plating material rather than the traditional copper. Results are observed for various plating techniques like DC plating, Pulse Plating and Pulse reverse plating techniques. Pulse plating leads to deposition of nano grain on to the PCB. On deposition of nanograin produces eminent advantages rather than traditional DC plating. Steps are taken to commercialise this activity and to transfer the knowledge to industries in INDIA to familiarize the industry with the advantage of nanoelectronics.

Biography

S Jayapoorani has completed her PhD at the age of 33 years from Anna University, Chennai and aims at transferring the nanotechnology knowledge to industries. She is the Professor at premier Sona College, India. She has published more than 10 papers in reputed journals. She started her career as a lecturer in the year 2001. She has been acting as a coordinator for National level Conferences, Workshops, Seminars, ISTE sponsored SDP and STTP programmes organized by the Department She has guided more than 25 UG and 10 PG projects. She has been acting as a coordinator for National level Conferences, Workshops, Seminars, ISTE sponsored SDP and STTP programmes organized by the Department.

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Comparison of methods for the synthesis of Eu^{+++}, Tb^{+++} and Tm^{+++} doped Y_2O_3 nanophosphors by sol-gel and hydrothermal methods for bioconjugation

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Rare earth ions doped metal oxides are a class of luminescent materials which have been proved to be excellent for applications in field emission displays and cathode ray tubes, plasma display panels. Under UV irradiation Eu^{+++} doped Y_2O_3 is a red phosphor and Tb^{+++} doped Y_2O_3 is a green phosphor. It is possible that, due to their high quantum efficiency, they might serve as improved luminescent markers for identification of biomolecules, as already reported for CdSe and CdSe/ZnS nanocrystals. However, for any biological applications these particle powders must be suspended in water while retaining their phosphorescence. We hereby report synthesis & characterization of Eu^{+++} and Tb^{+++} doped yttrium oxide nanoparticles by sol-gel and hydrothermal processes. Eu^{+++} and Tb^{+++} doped Y_2O_3 nanoparticles have been synthesized by hydrothermal process using yttrium oxo isopropoxide $[Y_5O(OPr^i)_{13}]$ (crystallized twice) and it's acetyl acetone modified product [Y(O)(acac)] as precursors. Generally the sol-gel derived metal oxides are required to be annealed to temperature ranging from 400°C-800°C in order to develop crystalline phases. However, this annealing also results in development of aggregates which are undesirable for bio-conjugation experiments. In hydrothermal process we have achieved crystallinity of the nanoparticles at 300°C and the development of crystalline phases has been found to be proportional to the time of heating of the reactor. The average particle sizes as calculated from XRD were found to be 28 nm, 32 nm and 34 nm by hydrothermal process. The particles were successfully suspended in chloroform in presence of tri-octyl phosphene oxide and TEM investigations showed the presence of single particles along with agglomerates.

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