Patent Search

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Inventor

Name	Address	Country
Dr. C. Selvakumar	Associate Professor, Department of Chemistry, Sri Sairam Engineering College, Chennai, Tamilnadu, India, Pincode: 635811	India
Dr. Sasikala M	Assistant Professor, Department of Chemistry, Saveetha Engineering College, Saveetha Nagar, Sriperumbadur Taluk, Kanchipuram-Chennai Rd, Chennai, Tamil Nadu, India, Pincode: 602105	India
Dr. M Parthasarathy	Associate Professor and Head, Department of Physics, VELS Institute of Science, Technology and Advanced Studies (VISTAS), Velan Nagar, Pallavaram, Chennai, Tamilnadu, India, Pincode: 600117	India
Mrs. S. Sumathy	Research Scholar, Department of Physics, VELS Institute of Science, Technology and Advanced Studies (VISTAS), Velan Nagar, Pallavaram, Chennai, Tamilnadu, India, Pincode: 600117	India
Mrs. Goparaju Savitri	Research Scholar, Department of Physics, VELS Institute of Science, Technology and Advanced Studies (VISTAS), Velan Nagar, Pallavaram, Chennai, Tamilnadu, India, Pincode: 600117	India
Dr. G. Rathika	Associate Professor, Department of Chemistry, PSG College of Arts & Science, Coimbatore, Tamilnadu, India, Pincode: 641014	India
Prof. (Dr.) Sharad Sakharam Sankhe	Professor & Vice-Principal, Department of Chemistry, Patkar Varde College, Goregaon, Mumbai, Maharashtra, India, Pincode: 400062	India
Dr. M.S.N.A. Prasad	Assistant Professor, Department of Chemistry, Institute Of Aeronautical Engineering (IARE), Dundigal, Hyderabad, Telangana, India, Pincode: 500043	India
Dr. Rajeev Ranjan	Assistant Professor, University Department of Chemistry, DSPM University, Ranchi, Jharkhand, India, Pincode: 834008	India
Dr. Sumanta Bhattacharya	Research Scholar, Department of Textile Technology, MAKAUT, Kolkata, West Bengal, India, Pincode: 700064	India
Dr. G. Raja	Professor, Department of Chemistry, Paavai Engineering College (Autonomous), Pachal Post, Namakkal District, Tamilnadu, India, Pincode: 637018	India

Applicant

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Dr. C. Selvakumar	Associate Professor, Department of Chemistry, Sri Sairam Engineering College, Chennai, Tamilnadu, India, Pincode: 635811	India
Dr. Sasikala M	Assistant Professor, Department of Chemistry, Saveetha Engineering College, Saveetha Nagar, Sriperumbadur Taluk, Kanchipuram-Chennai Rd, Chennai, Tamil Nadu, India, Pincode: 602105	India
Dr. M Parthasarathy	Associate Professor and Head, Department of Physics, VELS Institute of Science, Technology and Advanced Studies (VISTAS), Velan Nagar, Pallavaram, Chennai, Tamilnadu, India, Pincode: 600117	India
Mrs. S. Sumathy	Research Scholar, Department of Physics, VELS Institute of Science, Technology and Advanced Studies (VISTAS), Velan Nagar, Pallavaram, Chennai, Tamilnadu, India, Pincode: 600117	India
Mrs. Goparaju Savitri	Research Scholar, Department of Physics, VELS Institute of Science, Technology and Advanced Studies (VISTAS), Velan Nagar, Pallavaram, Chennai, Tamilnadu, India, Pincode: 600117	India
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Dr. Rajeev Ranjan	Assistant Professor, University Department of Chemistry, DSPM University, Ranchi, Jharkhand, India, Pincode: 834008	India
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Dr. G. Raja	Professor, Department of Chemistry, Paavai Engineering College (Autonomous), Pachal Post, Namakkal District, Tamilnadu, India, Pincode: 637018	India

Abstract:

The present invention introduces nanoparticles derived from a nickel oxide base, uniquely doped with both copper and manganese. This combination results in nanc exhibiting amplified antimicrobial and anticancer attributes. The doped nickel oxide nanoparticles leverage the inherent antimicrobial properties of copper, while mai integration aims at enhanced anticancer activity. Potential applications span across nanomedicine, targeting challenges such as antibiotic-resistant bacterial strains a cancer cell inhibition. This innovative composition promises to be a pivotal advancement in nanomaterial-based therapeutic solutions, setting the foundation for a ra biomedical interventions and treatments.

Complete Specification

Description:The present invention relates generally to the field of nanomaterials and, more particularly, to the development, synthesis, and applications of copper a manganese doped nickel oxide nanoparticles. Specifically, the invention focuses on the enhancement of both antimicrobial and anticancer properties of these nanoparticles for potential therapeutic and biomedical applications. This invention finds its relevance in areas spanning nanomedicine, oncology, microbiology, and advanced materials for health care applications.

Background of the invention:

The use of nanoparticles in medicine has gained significant attention over the past few decades, owing to their unique physicochemical properties, which often vary drastically from their bulk counterparts. One such material, nickel oxide (NiO) nanoparticles, has been recognized for its various potential applications, especially in realm of bio-applications. Their inherent attributes such as high surface area to volume ratio, superior electrical conductivity, and chemical stability have placed the forefront of advanced research.

Nickel oxide nanoparticles, by themselves, already exhibit certain biological activities. However, to amplify these capabilities and expand their scope of applications, with other metal ions has been explored. Doping, in the context of material science, refers to the introduction of impurity atoms into a material to modify its proper Two such elements that have been of interest in this sphere are copper (Cu) and manganese (Mn). Both elements, when introduced into other structures, have disp enhanced biological and chemical properties.

Copper, known for its antimicrobial activities, has been a prime component in several antimicrobial applications, from hospital equipment to water purification syst Introducing copper ions into a structure like nickel oxide nanoparticles can be expected to enhance the latter's microbial combat potential. On the other hand, man

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