

(54) Title of the invention : CHITOSAN STABILIZED FE₃O₄ - MAGNETIC NANOCOMPOSITE SYNTHESIS, CHARACTERIZATION, AND VERSATILE APPLICATIONS

<p>(51) International classification :A61K0049180000, B01J0020280000, C02F0001280000, A61K0049080000, B82Y0025000000</p> <p>(86) International Application No :NA Filing Date :NA</p> <p>(87) International Publication No : NA</p> <p>(61) Patent of Addition to Application Number :NA Filing Date :NA</p> <p>(62) Divisional to Application Number :NA Filing Date :NA</p>	<p>(71)Name of Applicant : 1)GOVERNMENT COLLEGE AUTONOMOUS Address of Applicant :Y. JUNCTION, Rajamahendravaram - 533103, Andhra Pradesh, India. Tel: 0883-2475732; Email: gcrjy1853@gcrjy.ac.in East Godavari -----</p> <p>Name of Applicant : NA Address of Applicant : NA</p> <p>(72)Name of Inventor : 1)Dr P V S SATYANARAYANA REDDY Address of Applicant :GOVERNMENT COLLEGE AUTONOMOUS, Y. JUNCTION, Rajamahendravaram - 533103, Andhra Pradesh, India. Tel: 0883-2475732; Email: gcrjy1853@gcrjy.ac.in East Godavari -----</p> <p>2)Mr B. DURGA LAKSHMI Address of Applicant :GOVERNMENT COLLEGE AUTONOMOUS, Y. JUNCTION, Rajamahendravaram - 533103, Andhra Pradesh, India. Tel: 0883-2475732; Email: gcrjy1853@gcrjy.ac.in Rajamahendravaram -----</p> <p>3)Prof RAMACHANDRA R K Address of Applicant :GOVERNMENT COLLEGE AUTONOMOUS, Y. JUNCTION, Rajamahendravaram - 533103, Andhra Pradesh, India. Tel: 0883-2475732; Email: gcrjy1853@gcrjy.ac.in Rajamahendravaram -----</p> <p>4)Mr. B. VAMSI KRISHNA Address of Applicant :GOVERNMENT COLLEGE AUTONOMOUS, Y. JUNCTION, Rajamahendravaram - 533103, Andhra Pradesh, India. Tel: 0883-2475732; Email: gcrjy1853@gcrjy.ac.in Rajamahendravaram -----</p> <p>5)Dr.T. K.VISWESWARA RAO Address of Applicant : "S A S GOVERNMENT DEGREE COLLEGE NARAYANAPURAM, Andhra Pradesh, India. Tel: 9440229928; Email: drtkvrao@gcrjy.ac.in " NARAYANAPURAM -----</p>
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(57) Abstract :

7. ABSTRACT The invention pertains to the synthesis and characterization of a chitosan stabilized Fe₃O₄ magnetic nanocomposite. This nanocomposite combines the magnetic properties of Fe₃O₄ nanoparticles with the biocompatibility and stability of chitosan. The synthesis involves coating Fe₃O₄ nanoparticles with chitosan, crosslinking with glutaraldehyde, and thorough characterization using techniques such as TEM, XRD, FTIR, and TGA. The resulting nanocomposite exhibits a core-shell structure with a chitosan shell, making it suitable for a broad spectrum of applications. It finds utility in drug delivery, serving as a magnetic resonance imaging (MRI) contrast agent, and as an efficient tool for environmental remediation by separating pollutants from fluid media. The nanocomposite's advantages include biocompatibility, stability, and versatility. Experimental results confirm its potential for diverse applications, such as controlled drug delivery and environmental cleanup.

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