Venkatesha N, Ph.D.

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EDUCATION

Ph.D., Materials Engineering Dept., Jan 2016. Indian Institute of Science. Bangalore, India.

Dissertation: Nanoparticles for Bio-Imaging: Magnetic Resonance Imaging and Fluorescence Imaging.

M.Sc, Analytical Chemistry; June 2009. Bangalore University, Karnataka, India.

B.Sc, Physics, Chemistry, Mathematics; June 2006. Bangalore University, Karnataka, India.

RESEARCH EXPERIENCE

Post-doctoral with Prof. Bashar Issa, RIHMS, University of Sharjah, UAE. June 2021 —Present

Post-doctoral with Prof Ihab M Obaidat, Physics dept, UAE University, Al Ain, UAE. December 2017 —May 2021.

Research Associate with Dr. Chandan Srivastava, Indian Institute of Science, Bengaluru, India. Jan 2016 —November 2017.

Graduate Research Student with Dr. Chandan Srivastava, Indian Institute of Science, Bengaluru, India. August 2010 — Jan 2016.

RESEARCH INTERESTS

- Synthesis of nanoparticles by chemical methods like coprecipitation, organometallic decomposition and Mechanochemical method.
- Designing and tuning (size and shape of the nanoparticles) of magnetic and optical properties of nanoparticles for various biomedical applications like bio imaging and drug delivery.
- Studying the effect of para and superparamagnetic agents on relaxometry of water protons for MR Imaging (T_1 and T_2 weighted images).
- Graphene oxide based Nano composites for imaging of cancer tumors and treatment.
- Magnetic Hyperthermia for treating cancer.
- Graphene oxide based nanocomposite for water purification.
- Molecular dynamics simulations using LAMMPS and Material studio.

TEACHING EXPERIENCE

Teaching assistant: IISc, Bangalore.

Taught the laboratory course for second and third year students in Dept. of Materials Engineering.

Assistant Lecturer: RV Engineering College, Bangalore, India, 2010.
Taught Engineering chemistry and laboratory courses.
Assistant Teacher: Green Valley High School, Bangalore, India, 2007.

SKILLSET

Synthesis: Synthesis of nanoparticles by coprecipitation, Polyol method, and organometallic decomposition method.

Characterization techniques:

- **XRD:** Phase analysis and determination of particle size and lattice parameters and Rietveld Refinement.
- **SEM:** Compositional analysis by EDS and determination of microstructure and particle size.
- **TEM:** Particle size and size distribution, electron diffraction and phase analysis.
- **VSM:** Determination of Magnetization with respect field, Zero field (ZFC) and field cooled (FC) curves to obtain the blocking temperature. Magnetic size distribution calculations using MH data.
- **AAS and ICP:** Quantitative analysis of elements.
- **UV-Visible, FTIR, and Raman:** To determine the band gap of semiconductors, study of the nature of bonding.
- **NMR and MRI:** Determination of T_1 and T_2 of water protons.
- **Cytotoxicity studies:** Handling of cell lines and MTT assay.
- **Software Skills:** MS-office, Origin, and Material studio for molecular dynamic simulations.

PUBLICATIONS

(1) **Venkatesha N**, Imaddin A. Al-Omari, Aleksandr S. Kamzin, Bashar Issa, Huseyin O. Tekin, Hafsa Khourshid, Hemant Kumar, Ambresh Mallya, Sangaraju Sambasivam and Ihab M. Obaidat. Specific Absorption Rate Dependency on the Co^{2+} Distribution and Magnetic Properties in $Co_xMn_{1-x}Fe_2O_4$ Nanoparticles. **Nanomaterials 2021**, 11, 1231.

(2) Sangaraju Sambasivam, Yedluri Anil Kumar, Chandu V.V. Muralee Gopi, **Venkatesha N**, Ihab M. Obaidat. Influence of temperature on the magnetic properties of Mn_3O_4 nanowires. **Current Chemistry Letters 2021**, 203-208, 2021.

(3) Sangaraju Sambasivam, KVG Raghavendra, Anil Kumar Yedluri, Hammad Mueen Arbi, **Venkatesha N**, Chandu VV Gopi, Byung-Chun Choi, Hee-Je Kim, Salem Alzahmi, Ihab M Obaidat. Facile Fabrication of $MnCo_2O_4$/NiO Flower-Like Nanostructure Composites with Improved Energy Storage Capacity for High-Performance Supercapacitors. **Nanomaterials 2021,** 11, 1424.

(4) **Venkatesha N,** Sangaraju Sambasivam, Alam Saj, Sulaiman Alaabed, Bashar Issa, Imaddin A. Al-Omari and Ihab M. Obaidat. Role of Magnetite Nanoparticles Size and Concentration of Hyperthermia under Various Field

Frequencies and Strengths. **Molecules 2021**, 26, 796.

(5) **Venkatesha N**, Sulaiman Alaabed, Bashar Issa, M-Ali AL-Akhras and Ihab M. Obaida. Molecular simulation of curcumin loading on graphene and graphene oxide for drug delivery applications. **Current Chemistry Letters 2021,** 161-168, 2021.

(6) Sangaraju Sambasivam, Chandu VV Muralee Gopi, Pardha Saradhi Maram, Hammad Mueen Arbi, **Venkatesha N**, Aleksandr S Kamzin, Ihab M Obaidat. Investigation of optical and magnetic properties of Mn-doped tetragonal ZrO2 nanocrystals. **Journal of Solid State Chemistry 2021**, 121872

(7) **Venkatesha N,** Hemant Kumar, Chandan Srivastava, Sulaiman Alaabed, Mohammed Aslam, Ambresh Mallya, and Ihab M. Obaidat. Adsorption of methylene blue and rhodamine B on graphene oxide-Fe3O4 nanocomposite: Molecular dynamics and Monte Carlo simulations. **Mater. Express, 2020**, Vol. 10, No. 3.

(8) Venkatesha Narayanaswamy, Sulaiman Alaabed, M-Ali AL-Akhras, Ihab M. Obaidat, Molecular simulation of adsorption of methylene blue and rhodamine B on graphene and graphene oxide for water purification. **Materials Today: Proceedings 2020,** 1078-1083.

(9) Ihab M. Obaidat*, Sulaiman Alaabed, Imad A. Al-Omari, **Venkatesha N**, Bashar Issa and Abbas Khaleel, "Field-dependent Morin Transition and Temperature-Dependent Spin-flop in Synthetic Hematite Nanoparticles", **Current Nanoscience 2020** 16: 1.

(10) Ihab M. Obaidat, **Venkatesha N,** Sulaiman Alaabed, Sangaraju Sambasivam and Chandu V. V. Muralee Gopi. Principles of Magnetic Hyperthermia: A Focus on Using Multifunctional Hybrid Magnetic Nanoparticles. **Magnetochemistry 2019**, 5, 67.

(11) **Venkatesha N, I.** M. Obaidat , Aleksandr S. Kamzin , Sachin Latiyan, Shilpee Jain, Hemant Kumar, Chandan Srivastava, Sulaiman Alaabed5 and Bashar Issa. Synthesis of Graphene Oxide-Fe_3O_4 Based Nanocomposites Using the Mechanochemical Method and in Vitro Magnetic Hyperthermia. **Int. J. Mol. Sci**. **2019**, 20, 3368.

(12) **Venkatesha N,** Ihab M. Obaidat, Sachin Latiyan, Shilpee Jain, Chiranjib Nayek, Sumana Goankar, M-Ali AL-Akhras, and Imaddin A. Al-Omari. Role of interface quality in iron oxide core/shell nanoparticles on heating efficiency and transverse relaxivity. **Mater. Express, 2019** Vol. 9, No. 4.

(13) C Nayek , M-Ali AL-Akhras , **Venkatesha N,** A Khaleel , Imaddin A. Al-Omari, A. Rusydi , and I M Obaidat Investigating the role of shell thickness and applied field on the magnetic anisotropy and temperature dependence of coercivity in Fe_3O_4 /γ-Fe_2O_3 core/shell nanoparticles. **Mater. Express, 2019,** Vol. 9, No. 2.

(14) **Venkatesha N,** Yasrib Qurishi, Chandan Srivastava. Graphene Oxide-Fe_3O_4 Nanoparticle Composite for Selective Targeting of Cancer Cells. **Nano Biomedicine and Engineering 2017,** 9(1), 96-102. (Corresponding Author).

(15) **Venkatesha N,** Pavan Poojar, Yasrib Qurishi, Sairam Geethanath, Chandan Srivastava. Zn1-xGdxS (x= 0.1, 0.2 and 0.3) Nanoparticles for Magnetic Resonance Imaging and Optical Fluorescence Imaging **Materials Research Express 2017,** 4, 035030.

(16) **Venkatesha N,** Qurishi Y, Atreya H. S and Srivastava C. Effect of core–shell nanoparticle geometry on the enhancement of the proton relaxivity value in a nuclear magnetic resonance experiment **RSC Adv. 2016**, 6, 64605-64610.

(17) **Venkatesha N,** Qurishi Y, Atreya H. S and Srivastava C. ZnO coated $CoFe_2O_4$ Nanoparticles for Multimodal

Bio-Imaging. **RSC Adv. 2016**, 6, 18843-18851.

(18) **Venkatesha N,** Poojar P, Geethanath S, Qurishi Y and Srivastava C. Ultra-fine $CoFe_2O_4$-Graphene oxide Composite as T_1 and T_2 contrast agents for MRI imaging. **RSC Adv. 2016**, 6, 17423-17429.

(19) **Venkatesha N,** Pudakalakatti S.M, Qurishi Y, Atreya H. S and Srivastava C. $MnFe_2O_4$–Fe_3O_4 Core–Shell Nanoparticles as a Potential Contrast Agent for Magnetic Resonance Imaging. **RSC Adv. 2015**, 5, 97807–97815.

(20) **Venkatesha N,** Poojar P, Geethanath S, Qurishi Y and Srivastava C. Graphene Oxide-Fe_3O_4 Nanoparticle Composite with High Transverse Proton Relaxivity Value for Magnetic Resonance Imaging. **J.Appl.Phys.2015,**117.

(21) **Venkatesha N,** Poojar P, Geethanath S and Srivastava C. Graphene Oxide-Gadolinium (III) Oxide Nanoparticle Composite: A Novel MR Contrast Agent with High Longitudinal and Transverse Relaxivity. **Mater. Res. Express.2014,**1,045008.

(22) **Venkatesha N,** Ashwini R, Poojar P, Geethanath S and Srivastava C. High Value of Proton Relaxivity Achieved by Graphene Oxide-Cobalt Ferrite Nanoparticle Composite: A Potential Contrast Agent in Magnetic Resonance Imaging. **J. Indian Inst. Sci. 2014,** 94, 415–422.

(23) **Venkatesha N,** Hegde V and Srivastava C. Synergetic Effect of Size and Morphology of Cobalt Ferrite nanoparticles on Proton Relaxivity. **IET Nanobiotechnol. 2013,** 8, 184-189.

(24) Hoque S. M, Srivastava C, **Venkatesha N** and Chattopadhyay K. Synthesis, Characterization, and Nuclear Magnetic Resonance Study of Chitosan-Coated Nanocrystals. **IEEE Trans. NanoBioscience 2013,** 12, 298–303.

(26) Hoque S. M, Srivastava C, Srivastava N**, Venkatesha N** and Chattopadhyay K. Synthesis and Characterization of Fe and Co-Based Ferrite Nanoparticles and Study of the T_1 and T_2 Relaxivity of Chitosan-Coated Particles. **J. Mater. Sci. 2013,** 48, 812–818.

(27) Hoque S. M, Srivastava C, Kumar V, Srivastava N**, Venkatesha N**, Das H. N, Saha D. K and Chattopadhyay K. Exchange-Spring Mechanism of Soft and Hard Ferrite Nanocomposites. **Mater. Res. Bull. 2013,** 48, 2871–2877.

(28) Hoque S. M, Srivastava C,**Venkatesha N,** Kumar P. S. A and Chattopadhyay K. Superparamagnetic Behaviour and T_1, T_2 Relaxivity of $ZnFe_2O_4$ Nanoparticles for Magnetic Resonance Imaging. **Philos. Mag. 2013,** 93, 1771–1783.