

Profile

Dr. Pooja J. A. Rao

Room No. 9, Department of Spice & Flavour Science

CSIR-CFTRI, Mysore

Karnataka, 570020

E-mail: shr_pooja@yahoo.co.in, poojarao@cftri.res.in

Ph: 0821-2512352

Academic:

Ph.D : Chemistry 2006 (Jamia Millia Islamia, New Delhi/ National Physical Laboratory, Council of Scientific and Industrial Research, New Delhi.)

Title of thesis : *“Synthesis of Alkaline Earth Aluminate Phosphors by Various Routes & Study of their Luminescent Characteristics”*

M. Sc. : Specialization in **“Organic Chemistry”** from Devi Ahilya Vishvavidhyalaya, Indore (M.P.) in 1997.

B. Sc. : Subjects – **Chemistry, Botany and Zoology**, from Devi Ahilya Vishvavidhyalaya, Indore (M.P.) in 1995.

HSC : **Physics, Chemistry, Biology** from M.P. Board, Bhopal in 1992.

Awards & Scholarships:

CSIR-NET : Qualified National Eligibility Test for Lectureship in 1999 & 2001.

CSIR-SRF : Senior Research Fellowship by CSIR (May 2003 - Feb. 2006).

Nominated for G. C. Jain Memorial Prize for the Best Thesis in Material Science (Chemistry) for the year 2005-06.

Research Experience

- **Junior Scientist** at Central Food Technological & Research Laboratory, Mysore in Spice & Flavour Science Since **April 2014 till date**.
- **Scientist ‘B’** at North-East Institute of Science & Technology, Jorhat, Assam in Material Science Division since **February 2006 to April 2014**.
- **Senior Research Fellow (CSIR)** at National Physical Laboratory, New Delhi under the supervision of **Dr. Harish Chander**, Head, LMD Group from **May 2003 to February 2006**.
- **Project Assistant** in the project entitled “Development of Luminescent Screens” at National Physical Laboratory, New Delhi sponsored by Defence Laboratory, Jodhpur from **January, 2001 to November, 2002**.

Expertise

- Nanoemulsion preparation involving bioactives/oils from spice, flavor and pigment rich materials
- Drying techniques for nanoemulsions
- Analysis and stability of nanoemulsions and dried nanoparticles
- Extraction methods and analysis of physical properties of spice compounds,
- Solid-state reaction method/Sol-gel method/Precipitation method/ Combustion method for preparation of inorganic luminescent nanoparticles, Fluorescent and phosphorescent material
- Metal based clay nanoparticles synthesis
- Application of XRD and spectroscopic techniques (UV-VIS, FTIR, GC, GC-MS, HPLC) to analyse bioactives/biomolecules, organic and inorganic compounds

Area of specialization: Chemistry (Materials chemistry)

Research interest: Nanoscience, Chemistry of bioactive molecules, Spice & Flavours Science

Analytical Proficiency

- Spectral Energy Distribution
- FT-Infrared Spectroscopy
- UV-Visible Spectroscopy
- Nuclear Magnetic Resonance Spectroscopy
- Transmission Electron Microscopy
- Scanning Electron Microscopy
- X-ray Diffraction
- Thermo gravimetric Analysis & Differential Thermal Analysis
- GC and High Pressure Liquid Chromatography

Research Publications

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| • Research Papers in International Journal | : | 13 |
| • Papers Presented in National/International Conferences | : | 15 |
| • Patents Filed and Approved | : | 2 |
| • Book Chapters | : | 2 |

Research Papers in International Journals

1. **Pooja Rao**, Hafiza khanum. (2016) *A green chemistry approach for nanoencapsulation of bioactive compound – Curcumin*. LWT- Food Science & Technology **65** 695.
2. **Pooja Sharma**, Siddartha Bhorodwaj, Dipak Kumar Dutta. (2008) *Ni Nanoparticles: Control size and morphology in meso porous clay*. Journal of Scientific Conference Proceedings **1** 39.
3. **Pooja Sharma**, D. Haranath, Harish Chander, Sukhvir Singh (2008) *Green Chemistry Approach for the Synthesis of Intense Green Light Emitting Long Persistent Phosphor in Nanoscale*, Applied Surface Science **254** 4052.
4. D. Haranath, **Pooja Sharma**, Harish Chander, Anwar Ali, N. Bhalla, S.K. Halder (2007) *Role of Boric Acid in Synthesis and Tailoring the Properties of Calcium Aluminate Phosphor*, Materials Chemistry and Physics **1** **101** 163.
5. D Haranath, **Pooja Sharma**, Harish Chander (20005) *Optimization of Boric Acid Content in Developing Efficient Blue Emitting, Long Persistent Phosphor*, Journal of Physics D: Applied Physics **38** (2005).
6. Harish Chander, D Haranath, Virendra Shanker, **Pooja Sharma** (2004) *Synthesis of Nanocrystals of Long Persisting Phosphor by Modified Combustion Technique*, Journal of Crystal Growth **27** 307.
7. D Haranath, Virendra Shanker, Harish Chander, **Pooja Sharma** (2003) *Tuning of Emission Colours in Strontium Aluminate Long Persisting Phosphor*, Journal of Physics D: Applied Physics **36** 2244.
8. D Haranath, Virendra Shanker, Harish. Chander, **Pooja Sharma** (2002) *Studies on the Decay Characteristics of Strontium Aluminate Phosphor on Thermal Treatment*, Materials Chemistry and Physics **78** 6.
9. Harish Chander, Virendra Shanker, D. Haranath, Suman Dudeja, **Pooja Sharma** (2003) *Characterization of ZnS:Cu, Br Electroluminescent Phosphor Prepared by New Route*, Materials Research Bulletin **38** 279.
10. D. Haranath, Harish Chander, Nitesh Bhalla, **Pooja Sharma**, K. N. Sood (2005) *Surface Distribution Studies and Improved Photoluminescence Characteristics of Silica Coated ZnS:Mn Nanophosphors Layers*, Applied Physics Letters **86** 201904.
11. D. Haranath, Harish Chander, **Pooja Sharma**, Sukhvir Singh (2006) *Enhanced Luminescence of $Y_3Al_5O_{12}:Ce^{3+}$ Nanophosphor for White Light-Emitting Diodes*, Appl. Phys. Lett. **89** 173118.

Detail of patents

S. No.	Patent Title	Name of Applicant(s)	Patent No.	Award Date	Agency/ Country	Status
1.	A Process for Preparation of Metal Oxides with dopants in lower valence state by Combustion Synthesis Technique in nanowires form.	H. Chander, V. Shanker, D. Haranath, <u>P. Sharma</u>	US 8609053	13-11-2014	US	Granted
2.	A Process for Preparing of nanowires of Metal Oxides with dopants in lower valence state	Harish Chander, Virendra Shanker, Divi Haranath, <u>Pooja Sharma</u>	ZL200810 098697.5	4-06- 2009	China	Granted

Books

S.No	Title	Author's Name	Publisher	Year of Publication
1	Nanoencapsulation of spice oils (accepted)	Pooja J. Rao, H. B. Sowbhagya	Elsevier	To be published in 2017
2	Nanoencapsulation of bioactive compounds for nutraceutical foods	Pooja J. Rao, Madhav M. Naidu	Springer	2016, Page number 129-157 ISBN978-3-319-39306-3

• Oral Presentation in National Conference

- **Pooja Rao**, Hafeeza Khanum, Pushpa S. Murthy, Shreelakshmi S.V., Maria Sheeba Nazareth, Nandini P Shetty, *Enhanced biological Properties of Nano-sized Curcumin for Nutraceutical Food Applications*. 85th Annual Meeting of Society of Biological Chemists (India), **21-24 Nov. 2016**, CSIR-CFTRI, Mysuru, page number 220.
- Beulah KC, **Pooja J Rao**, Ramalakshmi K and Pushpa S. Murthy, *Nanoencapsulation of Green Coffee Bean Extracts and their Quality Attributes*. 25th ICFOST, 10-12 Nov. 2016, Guru Nanak Dev University, Amritsar
- Swati Chauhan, **Pooja J. Rao**, *Extraction and Nanoencapsulation of Clove oil*. National Conference on SPICES: Challenges and Opportunities (NCS 2017), **2-3 Feb. 2017**, CSIR-CFTRI, Mysuru

Research Activities in Projects

Sl. No	Projects	Title of the project	Contribution in the project
1	MLP-0154	Isolation of bio-active molecules, food colorants, flavourants by novel methods from select plantation crops /spices and sterilization of select spices by unconventional methods. (Member)	Nanoencapsulation of Curcumin using green chemistry approach for food products
2	GAP-489	Technologies for development of value added products from green coffee. (member)	Nanoencapsulation of green coffee extract using organic solventless evaporation method

Guide Students

Degree	Year	University	Title
B.Tech Dissertation project	2015	Amity Institute of Food Technology, Amity University, Noida	Extraction of essential oil from clove and nanoencapsulation of its bioactive compounds
M.Tech Dissertation project	2017	Karunya University, Coimbatore, Tamil Nadu	Optimization of physio-chemical properties of nanoencapsulated clove Oil

Reviewer for International Journals

- Food Chemistry
- Trends in Food Science & Technology
- International Journal of Fruit Science