

# Ruby Phul

Karadas Research Group, Department of Chemistry, Bilkent University,  
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## Research Experience

### Postdoctoral Research Fellow (Oct/2018-Oct/2019)

Bilkent University, Ankara, Turkey

- Surface Engineered Metal Oxide Nanocomposites as an Efficient Catalysts for Electrochemical Water Splitting
- Funded by Scientific and Technological Research Council of Turkey (TUBITAK).

### PhD Research Fellow (2012-2018)

Jamia Millia Islamia, New Delhi, India

*Thesis Title: Synthesis, characterization and applications of metal oxide nanoparticles*

*Supervisor: Dr. Tokeer Ahmad*

- The synthesis of different metal oxide nanoparticles using different chemical routes.
- Operate the basic lab instrument and some advanced instruments such as powder X-ray diffraction, absorption spectrophotometry, FT-IR, BET surface area studies etc.
- The metal oxide nanoparticles were used for Antibacterial activity, Photocatalytic and Electrochemical water splitting reactions (HER, OER and ORR).

## Teaching Experience

### 2008-2012

#### Lecturer

Course: Inorganic and Physical Chemistry, Spectroscopy.

K.L.D.A.V. (P.G.) College, Roorkee, Uttarakhand, India.

### 2007-2008

#### Lecturer

Course: Soil Chemistry and Biochemistry.

B.S.M. (PG) College, Roorkee, Uttarakhand, India.

## Education

### 2012-2018

#### Ph.D. in Chemistry, Specialization: Nanochemistry

Title: Synthesis, Characterization and Applications of Metal Oxide Nanoparticles

Jamia Millia Islamia, New Delhi, India

### 2005-2007

#### Masters in Chemistry

HNB Garhwal University, Srinagar, Uttarakhand, India

### 2001-2004

#### Bachelors in Chemistry with Botany and Zoology

HNB Garhwal University, Srinagar, Uttarakhand, India

## Research Funding

### Senior Research Fellowship 2014-2017

*Council of Scientific and Industrial Research-University Grant Commission*

Government of India.

### Junior Research Fellowship 2012-2014

*Council of Scientific and Industrial Research-University Grant Commission*

Government of India

Awards
Best Paper Award, Recent Advances in Chemistry, 2017
Best Paper Award, Recent Advances in Chemistry, 2016
Best Poster Award, Recent Advances in Chemistry, 2015
Research Interest
<ul style="list-style-type: none"> <li>• Fabrication of materials for renewable source of energy in the form of Photo/Electrochemical water splitting.</li> <li>• Design and development of Heterogeneous catalysis for organic transformations.</li> <li>• Development of metal oxides based Biosensors.</li> </ul>
Expertise
<ul style="list-style-type: none"> <li>• X-Ray Diffraction, UV-Visible, FT-IR, XPS, SEM, BET.</li> </ul>
Publications
<ol style="list-style-type: none"> <li>1. <b>Ruby Phul</b>, Vipul Shrivastava, Umar Farooq, Meryam Sardar, Abul Kalam and Tokeer Ahmad, One pot synthesis and surface modification of mesoporous iron oxide nanoparticles. Nano-Structures &amp; Nano-Objects, 2019, 19, 100343.</li> <li>2. Umar Farooq, Farheen Naz, <b>Ruby Phul</b>, Nayeem Ahmad Pandit, Sapan Kumar Jain and Tokeer Ahmad, Development of heterostructured ferroelectric SrZrO<sub>3</sub>/CdS photocatalysts with enhanced surface area and photocatalytic activity. Journal of Nanoscience and Nanotechnology, 2019 (Accepted, In Press).</li> <li>3. Tokeer Ahmad, <b>Ruby Phul</b>, and Huma Khan, Iron Oxide Nanoparticles: An Efficient Nano-catalyst. Current Organic Chemistry, 2019, 23, 1-12. (<b>Ruby Phul is the main author. Dr. Tokeer Ahmad is PhD supervisor</b>).</li> <li>4. Umar Farooq, <b>Ruby Phul</b>, Saad M. Alshehri, Jahangeer Ahmed and Tokeer Ahmad, Electrocatalytic and enhanced photocatalytic applications of sodium niobate nanoparticles developed by citrate precursor route. Scientific Report, 2019, 9, 4488.</li> <li>5. <b>Ruby Phul</b>, Chanmeet Kaur, Umar Farooq and Tokeer Ahmad. Ascorbic acid assisted synthesis, characterization and catalytic application of copper nanoparticles. Material Science &amp; Engineering International Journal, 2018, 2, 90-94.</li> <li>6. Tokeer Ahmad, Umar Farooq, and <b>Ruby Phul</b>. Fabrication and photocatalytic applications of perovskite materials with special emphasis on alkali metal based niobates and tantalates. Industrial Engineering and Chemistry Research, 2018, 57 (1), 18.</li> <li>7. Tokeer Ahmad, Mohd Shahazad and <b>Ruby Phul</b>, Hydrothermal synthesis, characterization and dielectric properties of zirconia nanoparticles. Material Science &amp; Engineering International Journal, 2017, 1(3), 00017 (1-5).</li> <li>8. Tokeer Ahmad, <b>Ruby Phul</b>, Parvez Alam, Irfan H. Lone, Mohd. Shahazad, Jahangeer Ahmed, Tansir Ahamad and Saad M. Alshehri. Dielectric, optical and enhanced photocatalytic properties of CuCrO<sub>2</sub> nanoparticles. RSC Advances, 2017, 7, 27549. (<b>Ruby Phul is the main author. Dr. Tokeer Ahmad is PhD supervisor</b>).</li> <li>9. Tokeer Ahmad, <b>Ruby Phul</b>, Nafeesa Khatoon and Meryam Sardar. Antibacterial efficacy of Ocimum sanctum leaf extract-treated iron oxide nanoparticles, New Journal of Chemistry, 2017, 41, 2055. (<b>Ruby Phul is the main author. Dr. Tokeer Ahmad is PhD supervisor</b>).</li> <li>10. Tokeer Ahmad and <b>Ruby Phul</b>. Magnetic iron oxide nanoparticles as contrast agents: hydrothermal synthesis, characterization and properties. Solid State Phenomena, 2015, 232, 111. (<b>Ruby Phul is the main author. Dr. Tokeer Ahmad is PhD supervisor</b>).</li> </ol>

11. Tokeer Ahmad, Sarvari Khatoon and **Ruby Phul**. A review on chemical synthesis, characterization and optical properties of nanocrystalline transition metal doped dilute magnetic semiconductors. Solid State Phenomena, 2013, 201, 103.

### Courses & Training

#### *Continuing Education Program & Short Course on*

“Electron Microscopy & Microanalysis of Materials” jointly organized by Department of Metallurgical Engineering, IIT-BHU, Varanasi and Electron Microscope Society of India (EMSI), India.

*Global Initiative of Academic Networks (GIAN) course:* Approved by Department of Higher Education, Ministry of Human Resource Development, Govt. of India.

Vibrational spectroscopy and the molecular vibrations by *Rui Fausto* (Portugal), NIT Kurukshetra, Haryana, India.

Organic Light Emitting Diodes (OLEDs) for future lighting and displays by *Jwo Huei Jwo* (Taiwan), Jamia Millia Islamia, New Delhi, India.

Recent Developments in Nano Materials for Energy and Health Care Applications by K. V. Ramanujachary (Rowan University, USA), Jamia Millia Islamia, New Delhi, India.

Vocational Training on

“Analysis of Industrial Waste Water/ Potable Water using different Analytical Techniques” Central Building Research Institute, Roorkee, Uttarakhand, India.

### Conferences

#### **Oral**

- Oral presentation on the title, “Photo-catalytic and Dielectric Properties of  $\text{CuCrO}_2$  Nanoparticles” at Recent Advances in Chemistry (RAC-2017), Jamia Millia Islamia, New Delhi, on March 28<sup>th</sup>, 2017.
- Oral presentation on the title, “Effect of Biological Modification on Antibacterial Efficacy of Iron oxide Nanoparticles” at International Seminar on Recent Advances in Chemical & Biological Sciences, Maharishi Markandeshwar University Mullana, Ambala, on February 6<sup>th</sup>, 2017.
- Oral presentation on the title, “Antibacterial Efficacy of plant extract treated Iron Oxide Nanoparticles” at Recent Advances in Chemistry (RAC-2016), Jamia Millia Islamia, New Delhi, on April 26<sup>th</sup>, 2016.

#### **Poster**

- Poster presentation on the title, “Ultra-small ruthenium oxide nanoparticles as an Efficient Nanocatalysts for Electrochemical Water Splitting” at International Conference on Nanotechnology: Ideas, Innovation and Initiatives-2017 (ICN:3I-2017), Indian Institute of Technology, Roorkee, on December 06-08, 2017.
- Poster presentation on the title, “Antibacterial Activity of *Ocimum tenuiflorum* treated Iron Oxide Nanoparticles” at International Conference on Nanoscience, Nanotechnology & Advanced Materials (NANOS2015), GITAM University, Gandhinagar Campus, Rushikonda Visakhapatnam, on December 14-17, 2015.
- Poster presentation on the title, “Synthesis, Characterization and Comparison of the Peroxidase-Like Activity of Unmodified and Polymer-Modified  $\text{Fe}_3\text{O}_4$  Nanoparticles” at National Conference on Interdisciplinary Approaches in Chemical Sciences, IACS 2015, Jamia Millia Islamia, New Delhi, on December 16 2015.
- Poster presentation on the title, “Peroxidase-like Activity of Polymer Coated Iron Oxide Nanoparticles” at 2nd AISRF Meeting on Advanced Nanomaterials for Energy, Optoelectronics and Biological Applications, IISER Mohali, Punjab on November 25-27, 2015.
- Poster presentation on the title, “Peroxidase-like Activity of Polymer Coated Iron Oxide Nanoparticles” at 9th National Conference on Solid State Chemistry and Allied Areas,

Bhaskaracharya College of Applied Sciences, University of Delhi, Delhi, on May 8-10, 2015.

- Poster presentation on the title, “Synthesis, Characterization and Properties of Iron Oxide Nanoparticles” at Recent Advances in Chemistry (RAC-2015), Jamia Millia Islamia, New Delhi, on March 26th, 2015.
- Poster presentation on the title, “Synthesis and characterization of surface modified  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> nanoparticles for biomedical applications” at 102th Indian Science Congress, University of Mumbai, Mumbai, on January 3-7, 2015.
- Poster presentation on the title, “Reverse Micellar Synthesis and Structural Characterization of BSZ Nanoceramics for Dielectric Properties” at Recent Advances in Chemistry (RAC-2014), Jamia Millia Islamia, New Delhi, on March 24th, 2014.

### **Participation**

- Participated in one day Author workshop on “Getting Published in the Digital Age” at Jamia Millia Islamia, New Delhi on October 11, 2017.
- Participated in one day Author workshop on “Scholarly Writing and Intellectual Ethics” at Jamia Millia Islamia, New Delhi on September 26, 2017.
- Participated in one day user awareness programme on “Shodhganga & Anti-Plagiarism Software (URKUND)” at Jamia Millia Islamia, New Delhi on August 25, 2017.
- Participated in one day workshop on “h-index of the authors of Indian Journals” at Jamia Millia Islamia, New Delhi on October 8, 2015.
- Participated in one day workshop on “Reference Management in Research” at Jamia Millia Islamia, New Delhi on May 26, 2015.
- Participated in orientation programme on “Turnitin (an originality check and anti-plagiarism web tool)” at Jamia Millia Islamia, New Delhi on April 7, 2015.
- Participated in Science Academies’ Lecture Workshop on “Nanoscience and Nanotechnology” at Jamia Millia Islamia, New Delhi, during March 1-2, 2013.
- Participated in “National Conference Advanced Trends in Nanoscience and Nanotechnology” at Jamia Millia Islamia, New Delhi on February 25, 2013.

### **Membership**

- Electron Microscope Society of India (EMSI).
- American Chemical Society (ACS).

### **Referees**

- Dr. Tokeer Ahmad (Supervisor)  
Department of Chemistry, Jamia Millia Islamia New Delhi-110025 India  
Email: tahmad3@jmi.ac.in
- Dr. Ferdi Karadas  
Department of Chemistry, Bilkent University, Ankara-06800, Turkey  
Email: karadas@fen.bilkent.edu.tr
- Prof. K. V. Ramanujachary  
Department of Chemistry and Biochemistry, Rowan University, USA  
Email: chary@rowan.edu