



**SERB**  
**VRITIKA PROGRAM**  
**ACCELERATE VIGYAN SCHEME**  
**Training and Skill Internship on**

**Development of bimetallic transition metal cluster complexes for small molecule activation**

**May 16 – June 30, 2022**

**Organized by**  
**Materials Chemistry Department**  
**CSIR-Institute of Minerals and Materials Technology, Bhubaneswar, Odisha**

**VRITIKA**

VRITIKA program under Accelerate Vigyan Scheme of SERB is an initiation and practice in science through Training and Skill Internship. This program aims to provide opportunities to promising PG students from universities and colleges to get exposure and hands-on research skill development experience. These internships will primarily be facilitated by organizations / institutions / laboratories of national importance such as IITs, IISc, IISERs, NITs, CSIR, ICAR, ICMR etc.

**Who can Register:**

Post graduate students (Ongoing/Pursuing)

**Number of Positions Available:**

Four

**Duration:**

46 days (May 16 – June 30, 2022)

**Venue:**

Materials Chemistry Department, CSIR-Institute of Minerals and Materials Technology, Bhubaneswar, Odisha-751013.



## About CSIR-IMMT

CSIR-Institute of Minerals and Materials Technology (IMMT) was established on 13.04.1964 as Regional Research Laboratory, Bhubaneswar in the eastern part of India under the aegis of the Council of Scientific and Industrial Research (CSIR), New Delhi. It was renamed in 2007 with a renewed research focus and growth strategy to be a leader in the areas of mineral & material resource engineering. The institute has expertise in conducting basic research and technology oriented programs in a wide range of subjects to address the R&D problems of mining, mineral and metals industries and ensure their sustainable development. For the last one decade, the main thrust of R&D at CSIR-IMMT has been to empower Indian industries to meet the challenges of globalization by providing advanced and zero waste process know-how and consultancy services for commercial exploitation of natural resources through the public-private-partnership (PPP) approach. Today, CSIR-IMMT is the first choice for many mineral based industries. It is also carving out a niche in processing of advanced materials for greater value addition and working on resource use efficiency of critical raw materials.

## About the Training and Skill Internship

Electronic unsaturation in transition metal complexes is induced by bulky ligands. The bulky ligands shield the metal center from the approach of large molecules, leaving enough room for the selective approach of small molecules. Bulky ligands such as phosphines and N-heterocyclic carbenes stabilize the reactive intermediates of transition metal complexes, where the metal is lacking the necessary number of electrons to attain an 18-electron configuration. Based on this approach, several unsaturated transition metal complexes will be synthesized and the reactivity of these complexes in small molecule activation will be studied.

This Vritika program aims to demonstrate synthesis, purification, and characterization of bimetallic cluster complexes. Students will explore the structures and reactivity of these bimetallic complexes containing bulky ligands towards small molecule activation. They will be trained to prepare and handle air-sensitive compounds using Schlenk line techniques. This internship will provide opportunities to access high-end instruments such as FTIR-ATR Spectrometer, UV-Visible Spectrometer, Gas Chromatography-Mass Spectrometer at CSIR-IMMT. The students will also get training to operate these analytical instruments.



## How to Apply?

- The applicant has to e-mail the scanned copy of duly filled-in application form along with all required documents and certificates mentioned in the Table below (PDF only) to the e-mail ID: [csirimmt.vritika@gmail.com](mailto:csirimmt.vritika@gmail.com) before **8<sup>th</sup> May, 2022, 23:59:59** (Time).
- Send the scanned copy of filled-in Application form with required documents as a single PDF file with the **Subject** line having **Application\_Vritika\_Candidate Name\_Institution Name**.
- Application sent after due date (8<sup>th</sup> May, 2022), incompletely filled application, application without signature, application without required attachment/document, application without proper clarity will **NOT** be considered.

Document Attaching Order (In single pdf file)	
1.	Filled & Signed Application Form (Annexure -I)
2.	Endorsement cum No Objection Certificate duly approved by Head of Department (Annexure -II)
3.	Signed Undertaking Form (Annexure -III)
4.	Letter of Intent (Upto 300 words): (i) Why do you wish to attend this Skill Internship and Training? (ii) What do you indent to learn? (iii) How will it be useful for your career?
5.	Resume (Not exceeding 2 pages)
6.	P.G. Semester Marksheets (Self Attested)
7.	U.G. Degree Certificate (Self Attested) Or A proof for CPI/CGPA/% obtained in UG Degree (if CPI/CGPA/% not mentioned in UG Degree Certificate) (Self Attested)
8.	Institution/College/University I.D. Card (Scanned Copy)

## Selection

- The screening will be primarily based on the details provided in the application form.
- Shortlisted applicants will be intimated electronically.



## Provisions in Training and Skill Internship

- Food and accommodation facilities during the training and skill internship will be arranged by CSIR-IMMT.
- For outstation candidates, one time onward and return train ticket cost (Shortest route to Bhubaneswar Railway station in 2S/Sleeper class) will be reimbursed (as per TA norms).
- Certificate will be provided on successful completion of this Training and Skill Internship.
- The financial assistance for conducting this event has been provided by the **Science & Engineering Research Board**, a statutory body of the **Department of Science & Technology (DST), Government of India**.

## Document Submission during the Program

- The selected students should submit original hard copy of the application form with relevant documents (emailed as soft copy while applying for this event).
- The student should submit a “Joining Report” to HRD, CSIR-IMMT at the time of joining.
- The student should also submit Self Declaration form - COVID 19 as per Government of India/State of Odisha guidelines at the time of joining.
- At the end of the program, the student has to submit a Training and Skill Internship report.

## Caution

- **NO** benefit/certificate would be provided for the student dropping/leaving/partially attending the Training and Skill Internship.
- **NO STIPEND** for this Training and Skill Internship.

## Contact:

### Dr. Sumit Saha

Senior Scientist, Materials Chemistry Department  
CSIR-Institute of Minerals and Materials Technology

Bhubaneswar-751013, Odisha

Email: [sumitsaha@immt.res.in](mailto:sumitsaha@immt.res.in)

Office: 0674-237-9350; Mobile: +91 8250383948

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**Annexure - I**

**Application Form**

1.	Prefix	Mr./Mrs./Ms.
2.	Full Name of the Applicant (Full name as described on certificate)	
3.	Father's/ Mother's/ Guardian's name	
4.	Date of birth (DD/MM/YY)	
5.	Gender	Male/Female
6.	Nationality	Indian/_____
7.	Email Address	
8.	Correspondence Address	
9.	Permanent Address	
10.	Contact Number	
11.	P.G. Degree Pursuing	M.Sc./M.Tech./M.E./Others_____
12.	P.G. Degree Specialization Subject	
13.	Name of the	



	Institution/University/College (P.G. Degree)			
14.	Institution/University/College Address (P.G. Degree)			
15.	Division/Department/School (P.G. Degree)			
16.	CPI/CGPA/Percentage obtained in P.G. Degree (Fill whichever applicable) <b>*Attach self-attested photocopy of all available marksheets</b>	Semester 1	Semester 2	Semester 3
17.	U.G. Degree Completed	B.Sc. / B.Tech. / B.E. / Others_____		
18.	U.G. Degree Specialization Subject			
19.	Name of the Institution/University/College (U.G. Degree)			
20.	Institution/University/College Address (U.G. Degree)			
21.	Division/Department/School (U.G. Degree)			
22.	CPI/CGPA/Percentage obtained in U.G. Degree <b>*Attach a proof for CPI/CGPA/% obtained in UG Degree</b>			
23.	Emergency Contact Person			
24.	Emergency Contact Person's Mobile Number			

**I agree that all the information mentioned are correct and I shall be  
liable for the same.**

**Place:**

**Date:**

**Signature of the Applicant**

**Annexure – II**  
**Endorsement cum No Objection Certificate from the Head**  
**of the Department**

(To be given on University/ Institute/ College Letterhead)

**This is to certify that:**

1. Mr. / Ms. / Mrs. \_\_\_\_\_, is a bonafide student of our University / Institute / College and will assume full responsibility for actively participating in the Training and Skill Internship on “Development of bimetallic transition metal cluster complexes for small molecule activation” sponsored by SERB under the Accelerate Vigyan Scheme, and organized by CSIR-Institute of Minerals and Materials Technology, Bhubaneswar, from May 16<sup>th</sup> to June 30<sup>th</sup>, 2022.
2. The Applicant is a Full-time / part-time student of our University/ Institute/ College and enrolled in M.Tech. / M.Sc. / M.E. Programme in ..... Department.
3. The candidate has secured \_\_\_\_\_ % / CGPA / CPI till date (if applicable).
4. The University/ Institute/ College also endorses the conduct of the applicant to be of highest order who bears a good moral character.
5. The University/ Institute/ College has “No-Objection” for the candidate participation during the above said period.
6. The candidate, if selected for participation, shall be duly permitted to attend the Training and Skill Internship on physical mode. The University/ Institute/ College may provide the necessary facilitation needed for this purpose.

**Date:**

**Signature and Seal with name**

**Place:**

**(Head of the Department)**

## **Annexure - III**

### **Undertaking from the Student Applicant**

1. I hereby provide my consent to participate in the Training and Skill Internship titled "Development of bimetallic transition metal cluster complexes for small molecule activation" organized by CSIR-Institute of Minerals and Materials Technology at Bhubaneswar upon selection.
2. Vouch for participating in this Training and Skill Internship whole-heartedly and attend all the lab sessions, sincerely with utmost dedication.
3. I shall also be responsible and attentive to involve myself during the discussion/interaction session.
4. I am aware that it is mandatory to attend all the lab sessions, compulsorily qualify the course assessment and submit report in order to successfully avail the certification.
5. I understand that the materials supplied during this Training and Skill Internship are only for educational/academic purpose.
6. Uploading/hosting/sharing any content on any platform shall be unlawful on the grounds of Intellectual Property Rights.
7. Any Proxy participation in the Training and Skill Internship shall invite immediate cancellation of his/her candidature and same shall be reported to parent institution.
8. I understand to ensure my physical presence and any support in this regard is to be sought from the applicant's parent Institution. The organizing institute shall not be liable for the same.
9. I shall strictly follow the COVID guidelines issued by Government of India and State of Odisha.
10. I agree to abide by any other terms and conditions of Organizing Institute and SERB.

Name of the Applicant :

Gender & Age :

Degree (M.E./M Tech/M.Sc.) :

Institution/College/University :

Date :

Place :

Signature of the Applicant :