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Dated 24-7-2026

No. PGD/Chem/

Prof. Satya Paul(Guide) Mobile: 9419147677
Swapna Bhardwaj Mobile: 8082203763
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Head
SAIF, IIT Bombay,
Powai, Mumbai-400076.

Subject: Recording of FEG-SEM and EDX study

Dear Sir/Madam,

For FEG-SEM study sample is immobilization of aminated lignin on Fe-MOF supported on Fe_3O_4 , having code G-U.

For FEG-SEM and EDX study sample is Pd(0) immobilized on aminated lignin based Fe-MOF supported on Fe_3O_4 , having code G-Y.

I will acknowledge IIT Bombay, Powai, in my publications if the IIT Bombay Instrument results are incorporated in them. I request you to frame the bill in the name of Swapna Bhardwaj. Content of this report is meant for our information only and we will not use the content of this report for advertisement, evidence, litigation or quote as certificate to third party.

Thanking you in anticipation.

Yours sincerely,

Prof. Satya Paul
Professor,
P.G. Department of Chemistry,
University of Jammu, Jammu

INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY

Sophisticated Analytical Instrument Facility (SAIF)

Field Emission Gun Scanning Electron Microscope (FEG SEM)

Analysis Request Form

Applicant Details

User belongs to: ☐ IIT Bombay ☒ University ☐ National Lab ☐ Industry

User name: Swapna Bhardwaj

Institute/University/Organization: University of Jammu

Email ID: Swapnabhardwaj284@gmail.com Mobile No.: 8082203763

Name of Guide/PI: Prof. Satya Paul

Guide/PI Email ID: paul70@rediffmail.com Guide/PI Mobile No.: 9419147677

Address of Institute/Organization: Baba Sahab Ambedkar Road, Tawi,
Jammu, Jammu and Kashmir, 180006

Sample information:

Number of samples	<u>02</u>
Sample code	<u>G-U (FEG-SEM) , G-Y (EDX , FEG-SEM)</u>
Sample type	Biological / Composite Material / Thin Film / Crystalline Solid / Metal/Polymer/Ceramic/Composite/ Other (Please specify): *biological samples should be submitted after primary fixation
Detailed description of the sample (Refer Annexure I before filling)	<u>1) G-U → Immobilization of aminated lignin on Fe-MOF supported on Fe₃O₄</u> <u>2) G-Y → Pd(0) immobilized on aminated lignin based Fe-MOF supported on Fe₃O₄</u>
Sample form	☒ Powder/ ☐ Pellet/ ☐ Suspension/ ☐ On glass substrate/ ☐ Film/ ☐ Others.....
If sample is Pellet, thin film (Refer Annexure II before filling)	Mention sample dimensions.....
If sample is powder, Dispersion required (Refer Annexure II before filling)	Yes/ ☒ No If Yes, Medium for dispersion.....
Nature of the sample	☒ Non-Conducting / ☐ Conducting / ☐ Semi-Conductor
Sample is	☒ Magnetic / ☐ Non Magnetic

Type of analysis (Kindly tick):

SEM Image only	SEM Image + EDS	SEM Image + WDS	Only EDS	Only WDS
	☒			

SEM Analysis requirement:

SEM Image	Secondary Electron Image / Back Scattered Electron Image
Analysis requirement	☒ Surface Imaging / Cross Section Imaging / Surface + Cross Section imaging
Sample to be mounted	Planar/Cross Section/ Powder directly loaded on sample holder/ Drop cast for liquid or suspension samples
Expected Morphology	Brief description of shape... <u>Not known</u>
Expected Particle Size	<u>Not known</u>
If EDS is ☒ required	Point EDS /area EDS/ ☒ EDS mapping/ line scan List of expected elements (for EDS): <u>Fe, O, N, H, Pd, C</u>
If WDS is required	Only WDS / EDS + WDS (point scan)/WDS mapping/ WDS line scan List of expected elements (for WDS):

Material safety data:

If you are submitting more than one sample which are different in nature/composition, submit separate MSDS

Sample Properties	Carcinogenic (level) ☐ Toxic ☐ Radioactive ☐ Corrosive ☐ Explosive ☐ Flammable ☐ Other (specify): <u>Nil</u>
Moisture	Present ☐ Absent ☒ NA ☐
Volatile organic compound	Present ☐ Absent ☒ NA ☐
Stability of sample	Stable under RTP ☒ Hygroscopic ☐ Sublimes ☐ Reactive in: Air ☐ Light ☐ Heat ☐ Vacuum ☐ Moisture ☐ May decompose when exposed to accelerated electron beam ☐
Mention the storage and handling conditions if anything specific	
Whether incompatible with any material-	Yes ☐ No ☒ (Specify the materials):
Health hazards	Yes ☐ No ☒ (irritant to skin/irritant to eyes/harmful to skin/ toxic if inhaled/toxic if ingested)
First aid measures	
Disposal Method of sample	Eye/Skin/Inhalation/ Ingestion/Others (specify): <u>Nil</u>

please fill appropriate numbers in the NFPA diamond: (*reference image attached below)	
Additional information if any	

*Along with this form MSDS should be submitted if available.

Note: All Samples will be discarded after 15 days of analysis. If you wish to collect the samples then you are required to make arrangement for the same. SAIF office will not dispatch the same to users under any circumstances

Declaration

I confirm that the samples submitted for analysis are for research purpose only and the above furnished details are correct and true to the best of my knowledge. I understand that I will be held responsible for any damages arising from incorrect information provided by me against material safety data.

I agree to acknowledge DST and SAIF/CRNTS, IIT Bombay for providing (Instrument name) analytical facility for my research work, in my publications. I also agree to send the publication reference (Journal name/volume number/names of the authors/date of issue of the publication etc) to office.saif@iitb.ac.in

I declare that the "Content of this report is meant for our information only and we will not use the content of this report for advertisement, evidence, litigation or quote as certificate to third party" I accept that all the issued reports/results (Soft/hard) will not carry any Signature or Seal and Stamp of SAIF/CRNTS IIT Bombay.

Swapna
Signature of the User

Date: 23/7/2026
Place: Jammu

[Signature]
Signature of the In Charge/HOD/PI with College/P.I.
Guide seal / stamp

Professor,
P.G. Department of Chemistry,
University of Jammu, Jammu.

* Reference image for filling NFPA diamond:

**Health Hazard
Blue Diamond**
4-Deadly
3-Extreme Danger
2-Hazardous
1-Slightly Hazardous
0-Normal Material

**Fire Hazard
Red Diamond**
Flash Points
4-Below 72°F
3-Below 100°F
2-Above 100°F
not exceeding 200°F
1-Above 200°F
0-Will not burn



**Specific Hazard
White Diamond**
ACID - Acid
ALK - Alkali
COR - Corrosive
OX - Oxidizer
R - Radioactive
W - Use No Water

**Reactivity
Yellow Diamond**
4-May Detonate
3-Shock & Heat
may detonate
2-Violent Chemical
change
1-Unstable if heated
0-Stable