

Module code

SPC-3406

Type of module

Undergraduate: Chemistry – Elective

Semiconductors as Photocatalysts



Modular credits

2

Total student
engagement

28 hours

Prerequisite

SPC-1202
(Fundamental
Concepts in Chemistry)

Anti-requisite

None

Aims

To provide students with an advanced understanding of semiconductors, focusing on the various types of photocatalysts, photocatalytic processes, and photocatalytic applications.

Module learning outcomes (MLO)

On successful completion of this module, a student will be expected to be able to:

MLO 1

Analyse the chemistry of semiconductors mainly metal oxides and chalcogenides.

MLO 2

Predict the potential of metal oxides and chalcogenides as catalysts, photocatalysts, and visible light-active photocatalysts.

MLO 3

Demonstrate the synthesis and characterisation of the photocatalytic semiconductors.

MLO 4

Apply synthesised photocatalytic semiconductors for various applications.

Module contents

Chemistry of semiconductors	Chemistry of metal oxides and chalcogenides as semiconductors	Potentials of metal oxides and chalcogenides as catalysts and photocatalysts
Different types (doped and undoped) of light (UV and Visible) active semiconductors	Visible light-active semiconductors	Syntheses of photocatalytic semiconductors
Characterisation of the synthesised photocatalytic semiconductors	Applications of the synthesised photocatalytic semiconductors for various purposes	

Assessment

60%

Examination

40%

Coursework

Examination
60%

Class tests
30%

10%

■ Examination — 60% ■ Class tests — 30% ■ Assignment — 10%

Formative assessment

Weekly discussion
and feedback

Summative assessment

COMPONENT	WEIGHTING
Examination	60%
Coursework	40%
Individual	30%
Class tests	30%
Group	10%
Assignment	10%

Graduate attributes and skills

Programme learning objectives (PLO) addressed

- 1 PLO 1 (Fundamental Knowledge in Chemistry)
- 4 PLO 4 (Communication and Collaborative Skills)

- 3 PLO 3 (Critical Thinking and Problem-Solving Skills)
- 6 PLO 6 (Digital Literacy and Lifelong Learning Skills)

Sustainability concept addressed

- 3 SDG 3 Good Health and Well-Being
- 6 SDG 6 Clean Water and Sanitation
- 7 SDG 7 Affordable and Clean Energy

Digital skills/software used (not limited to)

- Word processing software (e.g. Microsoft Office, Excel, PowerPoint)
- Application software (e.g. Web browsers, statistical program, cloud-based storage and file sharing platform)
- Communication software (e.g. Zoom, Canvas)

Micro-credentialling option

No

Stackable towards GenBESTARI Undergraduate Degree Programme or other relevant Lifelong Learning Programmes

No

Document details

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