CH-911 Carbon Nanomaterials

Credit Hours: 3-0

Prerequisite: Nil

Course Objectives

a. Produce graduates with a high level of understanding and skills in carbon nanomaterials specially graphene and carbon nanotubes, together with the necessary research and applications knowledge;
b. expose the students to a range of technology areas, and provide an experience of a variety of different research and development cultures of various leading research groups across the university;
c. encourage students to work across discipline boundaries, with a resultant enhancement of interdisciplinary understanding;
d. equip the students with research specific training to enable them to be future technology leaders.

Course Outcomes

The students will have developed knowledge and skills in the following broad areas:

a. critically evaluate and solve technical problems related to carbon nanomaterials,
b. concepts, research skills and strategies regarding carbon nanomaterial-based synthesis, characterization and applications,
c. fundamentals of 2-, 1- and 0- dimensional nanomaterial systems,
d. development of good research practice and effective reporting on research outcomes,
e. understanding to produce original work making a significant contribution to knowledge in the area of graphene and carbon nanotube technology.

Course Contents

Fullerenes - Synthesis

Fullerenes - Properties and Characterization

Fullerenes - Applications

Carbon nanotubes - Synthesis

Carbon nanotubes - Properties and Characterization

Carbon nanotubes - Applications

Graphene - Synthesis

Graphene – Properties and Characterization

Graphene - Applications

Other carbon nano materials – synthesis, properties, characterization, and applications

Recommended Books

1. Graphene, Synthesis and Applications. Edited by Wonbong Choi, Jo-won Lee, ISBN-13: 978-1439861875, ISBN-10: 1439861870, CRC Press; 1 edition (2011).
2. Fullerenes, Chemistry and Reactions by Andreas Hirsch, Michael Brettreich. ISBN-10: 3527308202, ISBN-13: 978-3527308200, Wiley-VCH; 1 edition (2005)
3. Carbon Nanotubes, from Research to Applications, Edited by Stefano Bianco, ISBN 978-953-307-500-6. InTech Janeza Trdine 9, 51000 Rijeka, Croatia (2011).
4. Relevant articles from latest research journals.