



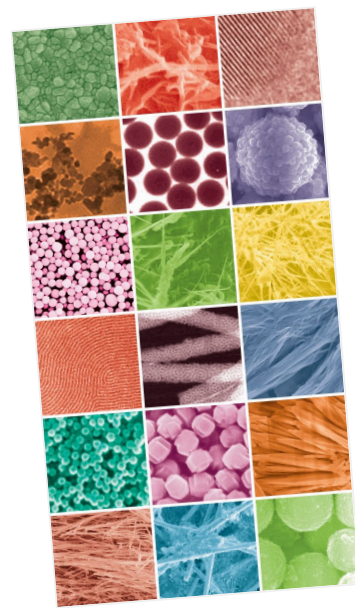
ST. JOHN'S
COLLEGE, ANCHAL

LET YOUR LIGHT SHINE BEFORE MEN

Add-On Course

Department of Physics is conducting an add-on course on 'Introduction to nanoscale materials' during the academic year 2021-22 for UG physics students

Co-ordinator : Dr Jiji SG
Assistant Professor
Department of Physics
St. John's College Anchal, Kollam.



Introduction to Nanoscale
Materials
2021-2022



Name of Course	ADD-ON COURSE (2021-2022) Introduction to Nanoscale materials
Course Code	PHY:AD21. 1
Department Offering the Course	Department of Physics
Course Duration	18 hours
Faculty in Charge	Dr Jiji SG
Purpose	The goal of this course is to provide an insight into the fundamentals of Nanoscale materials. The course covers the whole spectrum of nanomaterials ranging from overview, synthesis, properties, and characterization of nanoscale materials.
Instructional objectives	To understand the fundamentals of Nanomaterials To know the different synthesis methods. To acquire practical experience of nanomaterials synthesis/properties and characterization

Introduction to Nanoscale materials

PHY:AD21. 1

Duration 18 hrs

Module 1 : Fundamentals of Nanomaterials (6 Hours)

Introduction to nanoworld; classification based on the dimensionality- nanoparticles, nanoclusters- nanotubes-nanowires and nanodots; Semiconductor nanocrystals, carbon nanotubes; Properties: Mechanical, optical, electronic, magnetic and chemical properties.

Module II : Synthesis Methods: nano-regime (6 Hours)

Top down & bottom-up approaches

Module III : Basic Characterization methods of nanomaterials (6 Hours)

X-ray Diffraction - Thermal Analysis Methods, UV-Visible Spectroscopy – IR Spectroscopy – Raman Spectroscopy - Zeta Potential Measurement — X-ray Photoelectron spectroscopy – Optical microscopy
- Scanning Electron Microscopy – Transmission Electron Microscopy – Atomic Force Microscopy – Scanning Tunnelling Microscopy.

References

1. A text book of Nanoscience and Nanotechnology _ T. Pradeep
2. Manipulation of nanoscale materials: An introduction to nanoarchitectonics._Katsuhiko Ariga
3. Optical Properties and Spectroscopy of nanomaterials_ Jin Zhong Zhang

Course Co-ordinator

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Kerala - 691 306



Principal

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ST. JOHN'S COLLEGE ANCHAL

ADD ON COURSE SUMMARY

Affiliated to the University of Calicut
Recognized by the Government of India
Recognized for UGC College by UGC Govt. of India

REPORT 2021-2022

LET YOUR
LIGHT
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FOR THE
BETTER
MEN

Name of Course	ADD-ON COURSE (2021-2022) Introduction to Nanoscale materials
Course Code	PHY:AD21.1
Department Offering the Course	Department of Physics
Course Duration	18 hours
Faculty in Charge	Dr Jiji SG
Purpose	The goal of this course is to provide an insight into the fundamentals of Nanoscale materials. The course covers the whole spectrum of nanomaterials ranging from overview, synthesis, properties, and characterization of nanoscale materials.
Instructional objectives	To understand the fundamentals of Nanomaterials To know the different synthesis methods. To acquire practical experience of nanomaterials synthesis/properties and characterization
No of students Enrolled	18
Start & End Date	31/11/2021 to 31/03/2022

This add on course on Introduction to nanoscale materials (PHY:AD21.1) has been coordinated by the Department of Physics, St. John's College, Anchal. The course was specially designed to provide an introductory course on Nanomaterials which would be helpful to the students who are interested in this field. This add on course will help the students in their future studies especially in the field of research. This add on course was coordinated by Dr Jiji SG, Assistant Professor, Department of Physics. Course was properly planned and organised to provide maximum support to students during their learning process. The course duration was 18 hours. 18 students were enrolled for the program. The course started on 31/11/2021 and ended on 31/03/2022. During the end of course, an exit examination was conducted. All students wrote the examination. Final assessment was done based on the marks secured by them. All students passed in the examination. Certificates were also provided to them after the successful completion of the course. On the basis of this course students were able to do their end semester projects.

Course Co-ordinator

Principal

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