The duly filled up application should be mailed to:

Dillip Kumar Bisoyi
Professor (Associate)
DEPARTMENT OF PHYSICS & ASTRONOMY
NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA,
ROURKELA-769008.

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Tel. : 0661-2462722(O) / 09437502873(M)
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It is expected the participants from academic institution, Industry, Medical, R&D organization as well as professional scientists and engineers will be highly benefited by the course.

Course content

1. Introduction to: X-Ray production, properties & Applications (General)
2. Various X-ray Techniques & it's application in characterization of materials(Both Natural & Synthetic including Bio materials)

Scattering & Diffraction Techniques:

a) XRD (X-Ray Diffraction) [Powder & Single Crystal]
b) SAXS (Small Angle X-Ray Scattering)
c) GISAXS (Grazing Incidence SAXS for thin film characterization)

Spectroscopic Techniques:

a) XPS (X-Ray Photo electron Spectroscopy)
b) XAS (X-Ray Absorption Spectroscopy)
c) XRF (X-Ray Fluorosence)
d) PIXES(Particle Induced X-Ray Emission Spectroscopy)
e) EDXS (Energy Dispersive X-Ray Spectroscopy)

Medical Imaging Techniques:

a) X-Ray Radiography (Medical Applications)
b) X-Ray Radiotherapy (Medical Applications)
c) CT (Computer Tomography) Scanning (Medical Applications)

COURSE COORDINATOR & INSTRUCTOR:

Dillip Kumar Bisoyi
Professor (Associate)

REGISTRATION AND FEE PARTICULARS:

Applications in prescribed format and the course fee in the form of a cheque / demand draft drawn in favour of **"Continuing Education, NIT Rourkela"** payable at any bank in Rourkela must reach the coordinator on or before **10 May 2020**

COURSE FEE :

Participating Research Students	**: Rs. 5,000/-**
Participating from Academic & Research Institute	**: Rs. 8,000/-**
Participating from Industry	**: Rs. 10,000/-**
Participating from Medicals	**: Rs. 10,000/-**
Participating from ABROAD	**: USD 250/-**

Boarding and lodging expenses shall be borne by the participants. Accommodation will be provided in Guest House/Hostels on Twin-sharing basis on prior request. The selected participants will be informed by 15th May 2020

SHORT TERM COURSE
ON
X-RAY AND IT'S POTENTIAL APPLICATIONS IN SCIENTIFIC RESEARCH INCLUDING ENGINEERING & MEDICIAL
(XPASRIEM2020)

MAY 25 -30, 2020

Course Coordinator:

Dillip Kumar Bisoyi
Professor (Associate)
Department of Physics & Astronomy

NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA
ROURKELA-769008.

INTRODUCTION:

The importance of X-ray to the development of modern technology can be appreciated best by considering its wide spread applications in various branches of Science (Physics, chemistry, Life Science, Earth Science, Atmospheric Science, Oceanography, Engineering science& Medical sciences etc.)

It is amazing that many X-Ray analytical technique developed in the early parts of 20th century is still so important and advancing that without X-ray analysis research looses it's weight. Modern crystallography like macromolecular crystallography among others is no more just structure determination nor is it just fundamental knowledge rather an integral part of Cellulose, Protein, polymer & composites characterization. Crystal/macromolecular crystal structure analysis is done with application in mind, which provides the answer to many specific problems that leads to new product and opens many new perspectives. The application of X-ray techniques leads to abundant opportunities and challenges in the Scientific Research , industries & medicine.

With the advancement of different processing techniques to produce functional materials, it is necessary to create awareness among the scientist regarding scope and potential Applications of X-ray techniques to characterize the materials. Moreover the statistical averaging for nano order length structure is predominated by SAXS technique over electron microscopy (i.e. SEM & TEM). With this view ,the proposed short term course has been planned. Lectures on various aspects of advanced X-ray techniques have been included in addition to the Experimental Demonstration of available facilities in the Institute.

The lectures of the course have been structured to blend the fundamental concepts and methodology of X-ray technique for upgrading the knowledge of scientists, and technocrats & physicians responsible for the quality of materials & life.

ABOUT NIT ROURKELA :

National Institute of Technology (NIT) Rourkela came into existence as Regional Engineering College Rourkela in 1961. It is a prestigious institute with a reputation for excellence at undergraduate, postgraduate and PhD levels, fostering the spirit of national integration among the students, a close interaction with industry and a strong emphasis on research both basic and applied.

The city of Rourkela is a bustling industrial town cosmopolitan by nature and is well connected to all parts of the country by road and rail. It is en-route Howrah-Mumbai main line of South Eastern Railway Nesting amidst greenery on all sides, NIT campus is approximately 7km from Rourkela Railway station . The nearest airport is Ranchi, Kolkata ,Bhubaneswar & Jharsuguda which are well connected by rail and road.

DEPARTMENT OF PHYSICS:

Department of Physics, NIT Rourkela was established in 1961 since its inception. The department is under dynamic progress and is reputed for imparting education both at under graduation and post graduation levels along with PhD and M Tech (Research) programme.

The department has its own identity in the field of Small Angle X-ray Scattering (SAXS) research in GLOBAL Scenario. The first PhD in the field is produced in the year 1970 & this is the Golden Jubilee year (2020). To be particular It is the only institute in the country, where PhD degree are awarded that is dedicated in the field of SAXS since its inception and already produced 17 PhD scholars in this specialized field of research. Presently few scholars are also working in the same field for their PhD degree with main emphasis on the field. Besides that the department has well equipped laboratories such as Composite Lab.,Low temperature physics lab, Raman Spectroscopy lab, X-ray lab. Thin film lab, solid state physics lab, Computational Physics lab, Multiferroic lab etc. Along with that Astrophysics, High Energy Particle Physics & theoretical condensed matter Research Group also actively engaged for pursuing research keeping in view of the advancing technology.

SCOPE OF THE COURSE:

The course has been structured to blend the fundamental concepts and methodologies with advanced techniques of X-ray for upgrading the knowledge of persons responsible for controlling the quality of life and materials. The most advanced techniques under X-ray science and its approach to solve various problems of material science are included in the course with special emphasis on industrial and medical applications. Besides classroom teaching there are also experimental demonstration for important features of the course.

APPLICATION FORMAT

SHORT TERM COURSE
ON
X-RAY AND IT'S POTENTIAL APPLICATIONS IN SCIENTIFIC RESEARCH INCLUDING ENGINEERING & MEDICIAL
(XPASRIEM2020)

1. Name:

2. Designation:

3. Mailing address:

   Telephone No:

   Fax:

   E-mail:

4. Organization where employed (With no objection certificate from appropriate Authority):

5. Academic Qualification:

6. Experience (in years):

   (i) Research:

   (ii) Teaching:

   (iii) Industrial:

7. Registration fee particulars :

   Amount : Rs

   Cheque/DD No and Date:

8. Accommodation if required: Yes/No

Signature of the applicant with date