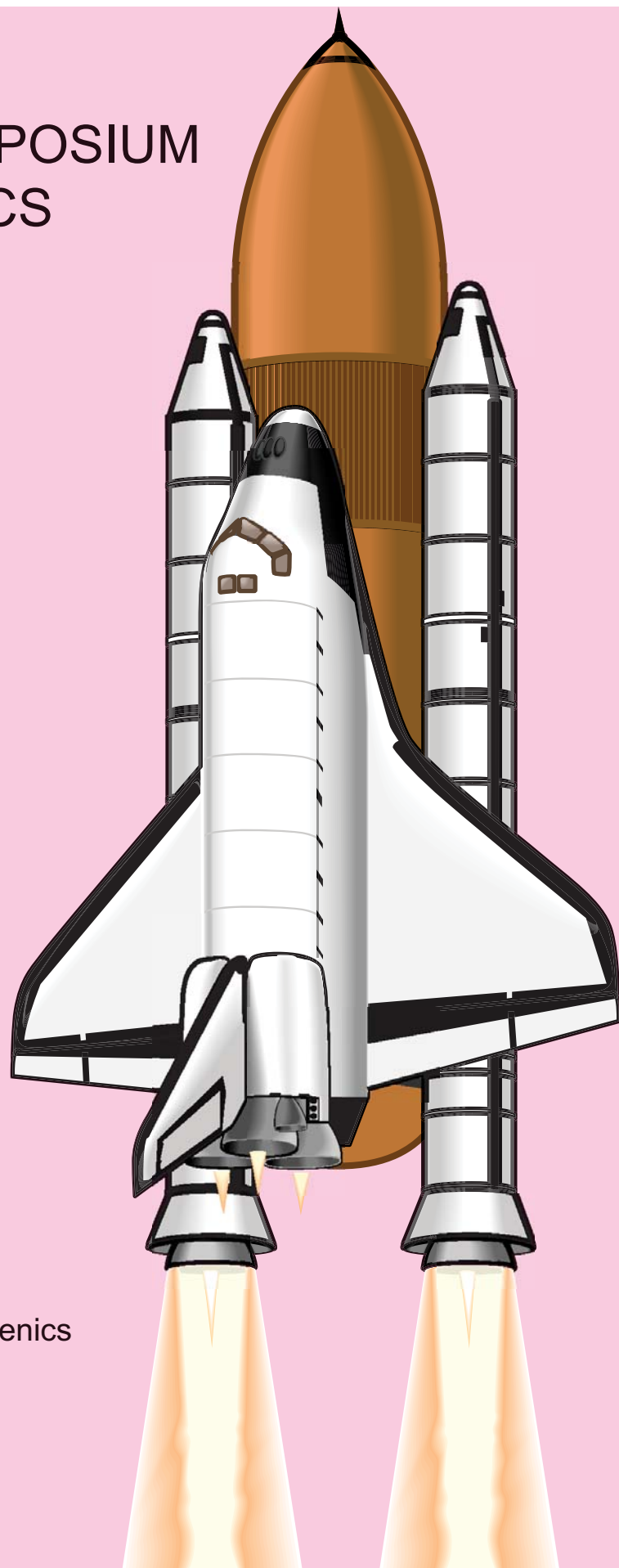


23rd NATIONAL SYMPOSIUM ON CRYOGENICS

www.nitrkl.ac.in/Conferences&Symposia

Pre-symposium Course:
October 26-27, 2010
Symposium:
October 28 - 30, 2010



Centre for Industrial Refrigeration and Cryogenics
Department of Mechanical Engineering
National Institute of Technology, Rourkela
Rourkela- 769 008 [Odisha]

OVERVIEW

The National Symposium on Cryogenics (NSC) organized by the Indian Cryogenics Council is a biennial event that every cryogenics professional in India looks forward to. This year's symposium, the Twenty Third National Symposium on Cryogenics, NSC-23 is being hosted by National Institute of Technology, Rourkela, one of the leading institutes of higher learning of engineering in India. The symposium will be held during October 28-30, 2010 (Thursday – Saturday). Apart from traditional topics of cryogenic engineering, superconductivity, and low temperature physics, NSC-23 is laying special emphasis on related subjects of cryomedicine and industrial gases. It is an attempt to bring together different streams of low temperature technology leading to fruitful discussions and promotion of inter-cultural knowledge.

The symposium will be preceded by a series of pre-symposium short term courses, covering topics of current relevance. Efforts are being made to invite leading personalities in their subjects and to ensure that the participants of courses get the best teachers of the country. Efforts are also under way to offer financial assistance to all participating students and young scientists to offset the cost of course fees and travel.

The cryogenic community in India is invited to actively participate in the symposium as well as in the pre-symposium courses. Please upload abstracts of your papers on the Symposium Website.

SYMPOSIUM TOPICS

Code	Topics
100	Cryogenic processes
101	Thermodynamics of cryogenic processes
102	Properties of cryofluids and fluid mixtures
103	Cryogenic heat transfer
104	Adsorption and purification of gases
105	Liquefied gas storage and transport
106	Separation & liquefaction of air and other gases
107	LNG and Liquid Hydrogen
108	Helium 3 and helium 4 systems
109	Ultra low temperatures
110	Novel refrigeration concepts

200	Cryogenic equipment
201	Cryostats and insulation systems
202	Liquefiers and refrigerators
203	Heat exchangers and regenerators
204	Compression and expansion machines
205	Closed cycle cryocoolers
206	Magnetic refrigeration
207	Cryogenic instrumentation
208	Miniature refrigerators
209	Miscellaneous cryogenic devices

300	Cryogenic technology
301	Superconducting magnets
302	Superconducting thin film devices
303	Cryogenics for accelerators
304	Cryogenics for fusion
305	Cryogenics for superconducting machines
306	Cryogenic propulsion
307	Cryogenic applications in satellites
308	Cryogenics in food and dairy industries
309	Vacuum technology
310	Miscellaneous applications

400	Air separation and industrial gases
401	Tonnage air separation
402	Bulk transportation and distribution
403	Small scale cryogenic air separation
404	Room temperature air separation
405	Industrial gases in iron and steel making
406	Miscellaneous applications of industrial gases
407	Cryogenic plant control, maintenance and safety
408	Industrial gases from sources other than air

500	Low temperature physics & materials engineering
501	Mechanical and thermal properties
502	Dielectric and magnetic properties
503	Conventional materials at low temperature
504	Novel and nano materials
505	Measurement techniques
506	Low T _c superconductors
507	High T _c superconductors
508	Instrumentation for low temperature experiments
509	Thin film devices

600	Cryogenics in biology and medicine
601	Biological processes at low temperature
602	Cryopreservation of cells and tissues
603	Cryosurgery
604	Equipment for cryopreservation & cryosurgery
605	Stem cell cryopreservation
606	Cryogenics in tissue engineering
607	Miscellaneous topics

700	Miscellaneous topics
701	Low temperature physics
702	Low temperature engineering

Prospective authors are required to submit two separate abstracts of their papers before the prescribed date. The two abstracts are:

- An extended abstract not exceeding two A4 size pages including text, figures, tables, references.
- A short abstract, limited to 250 words of text which will be used for printing in the symposium souvenir. It shall not contain any figure, table or reference.

The abstracts can be prepared using the template provided in the website ([www.nitrkl.ac.in/Conferences & Symposia](http://www.nitrkl.ac.in/Conferences&Symposia)) and be uploaded simultaneously but as two separate documents. The extended abstract will be peer-reviewed and authors will be informed about the acceptance status through website and email. Acceptance at this stage shall guarantee opportunity for oral or poster presentation but not for publication. On acceptance of the abstract, the full paper has to be uploaded by the authors and the same will also be peer reviewed. The full papers accepted for publication, and the extended abstracts of papers accepted only for oral/poster presentation, will be included in the proceedings subject to the condition that at least one of the authors registers for the symposium. Selected papers will also be considered for publication in the Indian Journal of Cryogenics.

PRE-SYMPOSIUM COURSES

It is proposed to offer up to six short courses depending on participants' interest. Each course shall be of six hour duration spread over a two days period (October 26-27, 2010). A participant may choose any two of the listed courses. Attempt will be made to organize the time table to help the maximum number of participants.

List of pre-symposium short courses

CRS1: Fundamentals of Cryogenics
 CRS2: Process Simulation-Use of Aspen Software
 CRS3: Air Separation Processes
 CRS4: Cryocoolers
 CRS5: Superconducting Magnets
 CRS6: Introduction to Cryobiology

These courses will be offered by eminent personalities in their respective fields across the country.

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SPONSORSHIP OPPORTUNITIES

The symposium provides a unique opportunity to industries/organizations to promote their products/services before international and national delegates and to interact with utility engineers, scientists and academicians by sponsoring the symposium in many different ways. They can sponsor sessions, lunches or dinners, or put advertisements in the souvenir. The symposium, apart from publicizing the products of their firms, will also offer free registration to specified number of delegates from the sponsoring organization

Sponsorship Details

Category	Amount (Rs.)	Benefits
Diamond Sponsor	3,00,000	<ul style="list-style-type: none">• Logo in website, souvenir and proceedings & One page profile in souvenir• One full page color advertisement in souvenir• One exhibition stalls (3×3 m)• Free registration for five delegates
Golden Sponsor	2,00,000	<ul style="list-style-type: none">• Logo in website, souvenir and proceedings & One page profile in souvenir• One full page color advertisement in souvenir• One exhibition stall (3×3 m)• Free registration for three delegates• Prominent banner display in front of symposium venue and stage
Silver Sponsor	1,00,000	<ul style="list-style-type: none">• One full page B&W advertisement in souvenir• One exhibition stall (3×3 m)• Free registration for two delegates• Banner display in front of symposium venue and stage
Sponsor for Dinner	80,000	<ul style="list-style-type: none">• Logo printed in dinner invitation card• One full page color advertisement in souvenir• Free registration for three delegates.• Prominent banner display during dinner
Sponsor for Lunch	60,000	<ul style="list-style-type: none">• Logo printed in lunch invitation card & a full page B&W advertisement in souvenir.• Free registration for two delegates.• Prominent banner display during lunch.
Sponsor for Cultural Programme	40,000	<ul style="list-style-type: none">• Announcement with Logo in invitation card• Free registration for one delegate• Banner display on the stage during cultural programme
Goodwill Sponsors	20,000	<ul style="list-style-type: none">• One full page B/W in souvenir

EXHIBITION

To promote fruitful industry-research-academia interaction, a technical exhibition on cryogenic products/services is planned at the symposium venue. This exhibition will be open to the galaxy of international and national delegates drawn from industry, research and academic institutions, during the entire duration of the symposium. For the exhibition, the organizing committee will provide stalls of size 3 × 3 meters with necessary facilities for display/demonstration of the commercial products/services. Exhibition Fee (per stall) is Rs. 50,000/-. Exhibitors are entitled to waiver of registration fee for one delegate and for one page B&W advertisement in the Souvenir. Interested organizations/industries are requested to contact Convener for obtaining further details regarding participation in the exhibition. The participants for the exhibition are requested to register on or before August 31, 2010.

Advertisement Tariff in Souvenir

Size of advertisement	Sponsorship amount (Rs.)
Outside Back Cover	50,000/-
Inside Cover Page	40,000/-
Full Page (Color)	30,000/-
Full Page (B & W)	20,000/-
Half Page (B & W)	10,000/-

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Director

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Note: Please address all correspondence to the convener

IMPORTANT DATES

- Abstract submission - July 10, 2010
- Abstract acceptance - July 31, 2010
- Submission of full paper - August 20, 2010
- Acceptance of full paper - September 20, 2010
- Registration with fee - June 01 to August 31, 2010
- Pre-symposium courses - October 26-27, 2010
- Symposium NSC-23 - October 28-30, 2010

REGISTRATION

The participants are requested to register on or before August 31, 2010. The registration fee includes delegate kit, admission to all sessions, a set of symposium materials (abstracts volume, symposium proceedings in a CD along with a souvenir).

FINANCIAL SUPPORT

Financial assistance in the form of waiver of registration fee, course fee and travel grant to students and young scientists below the age of 32 years are available where their affiliating organizations have no provision to pay the dues. Please apply separately on plain paper before September 15, 2010 giving complete biodata and with endorsement of supervisor or Head of the Department.

PAYMENT

All payments are to be made by Cheque/DD drawn in favour of "NSC-23, NIT Rourkela", payable at any bank at Rourkela on or before August 31, 2010.

Types of delegates	Registration Fee (Rs.) August 31, 2010	Late / Spot (Rs.)
Delegates	4,000	4,500
Student Delegates	2000	2500
Course fee for two courses	10000	10500

ABOUT THE HOST INSTITUTION

The National Institute of Technology Rourkela is one of the premier Institutes of technical education in our country. The institute offers thirteen B.Tech programs, twenty one specializations in M Tech, five post-graduate programs in Humanities and Basic Sciences and an MBA program. The Department of Mechanical Engineering offers three master's programs where Cryogenics constitutes a part of the curricula in Thermal Engineering. The department has a well equipped Cryogenics laboratory and has secured major R&D projects from the Department of Atomic Energy. The department hosts the "Centre for Industrial Refrigeration and Cryogenics" and is working on creation of a special Centre dedicated to Helium Cryogenics and Superconductivity.

VISITORS GUIDE

Please visit "VISITORS GUIDE" for 'Rourkela at a glance', 'Attractions', 'Communications' and 'Hospitality' in the symposium web site.

23rd National Symposium on Cryogenics - 2010

(Pre-symposium course : October 26-27, 2010)

(Symposium : October 28 - 30, 2010)



REGISTRATION FORM



Name				
Designation				
Organization Name				
Address for correspondence				
Phone/Cell				
Fax				
E-mail				
Category of Organization	Academic/Govt. Depts./R&D and Industry/Student Delegates			
Pre-symposium Course October 26-27, 2010	Interested in attending pre-symposium courses <input type="checkbox"/> Yes <input type="checkbox"/> No			
	If yes, please fill the preference table with digits 0 to 6. Course preference are, 6 : Highest preference, 1 : Lowest preference and 0: Not interested.			
	Course Title	Preference	Course Title	Preference
	Fundamentals of Cryogenics		Cryocoolers	
	Process Simulation- Use of Aspen Software		Superconducting Magnets	
	Air Separation Processes		Introduction to Cryobiology	
Registration Fee	Pre-symposium Course: Rs...../- (in words) Symposium: Rs...../- (in words) 			
Sponsorship Please tick (If applicable)	Interested in: <input type="checkbox"/> Sponsorship <input type="checkbox"/> Advertisement			
D. D. No., Date & Bank				
Board and Lodging	Tariff is to be paid directly to the Guest House/Hotel. Please arrange accommodation in: <input type="checkbox"/> Institute Guest House <input type="checkbox"/> Hotel in the price range of Rs. _____ per day			
(Signature)	Date:			