INDIAN INSTITUTE OF METALS

KANPUR CHAPTER

Annual Report (2012-2013)

Prepared By:

Dr. Shashank Shekhar

Secretary, IIM Kanpur Chapter

2012-2013

Annual Report (2012-2013)

April 12th, 2013

Dear Members of the IIM Kanpur Chapter and Friends,

IIM Kanpur has grown in leaps and bounds in last few years. Previous year (2012-2013) was no exception. The current executive committee took over in May 2012 and organized several events in past one year. It is important to mention here that the current executive committee received huge support from the members of outgoing committee and is immensely thankful to them. Some of our achievements in the current year are as follows:

- IIM Kanpur Chapter won the "Best Chapter Award" amongst medium chapters for consecutive third time in a row.
- N.K. Batra Memorial Quiz was organized with an unprecedented participation from in and around the Kanpur area
- Several events were organized where students mainly from IIT Kanpur and CSJM University, participated actively
- Several seminars/ guest-lectures were organized for the benefit of the students and the materials science community at large
- IIM Kanpur Chapter had its account audited, voluntarily, by an independent agency

The details of the various events are enclosed in the report, herewith.

The above mentioned success largely belongs to and is due to the student members of the Chapter who have been the major force behind these activities. In the end I would like to thank all the executive members and volunteers who have worked tirelessly throughout the year to take the IIM Kanpur Chapter to greater heights. I am certain that everyone, including me would extend the same support to the new executive council which will take over in May 2013.

Sincerely

Shashank Shekhar

Secretary, IIM Kanpur Chapter

Executive Committee (for the year 2012-2013)

In the last Annual General Body Meeting of IIM Kanpur Chapter which was held on April 14th, 2012, following members were elected for the executive committee of the Kanpur Chapter for the year 2012-2013

Dr. Kantesh Balani	Chairman
Dr. Krishanu Biswas	Vice Chairman
Dr. Shashak Shekhar	Secretary
Dr. Kallol Mondal*	Treasurer

(*since Dr. Kallol Mondal had to leave India for an extended period, the current executive committee nominated Dr. Kaustubh Kulkarni as the new Treasurer for the remainder of the duration)

Dr. Gouthama	Member
Dr. Anish Upadhyaya	Member
Dr. Vivek Verma	Advisor, Student Affiliate Chapter
Dr. Sandeep Sangal	Member (Ex-Officio)

Website of IIM Kanpur Chapter: **http://www.iitk.ac.in/mse/IIM/**

Indian Institute of Metals

Kanpur Chapter

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Executive Committee of IIM Kanpur Chapter

	Chair Prof. Kantesh Balani Email: kbalani@iitk.ac.in Ph: +91-512-259-6194		Vice Chair Prof. Krishanu Biswas Email: kbiswas@iitk.ac.in Ph: +91-512-259-6184
	Secretary Prof. Shashank Shekhar Email: shashank@iitk.ac.in Ph: +91-512-259-6528		Treasurer Prof. Kallol Mondal Email: kallol@iitk.ac.in Ph: +91-512-259-6156
	Member Prof. Anish Upadhyaya Email: anishu@iitk.ac.in Ph: +91-512-259-7771		Member Prof. Vivek Verma Email: vverma@iitk.ac.in Ph: +91-512-259-6527
	Member Prof. Gouthama Email: gouthama@iitk.ac.in Ph: +91-512-259-6527		Ex-Officio Prof. Sandeep Sangal (Head, MSE) Email: sangals@iitk.ac.in Ph: +91-512-259-7167
	Student Officer Mr. Sumit Ranjan Sahu Email: srsahu@iitk.ac.in		Student Officer Ms. Akanksha Mohan Email: mohan_akanksha@yahoo.co.in

Prof. Kaustubh Kulkarni
Treasurer (since Jan 2013)

Meetings Organized:

Executive committee of IIM Kanpur chapter met regularly to discuss and organize various events for the year 2012-2013.

1. May 10th, 2012
2. June 14th, 2012
3. July 4th, 2012
4. Sep 7th, 2012
5. Oct 9th, 2012
6. Nov 1st, 2012
7. Jan 10th, 2013
8. March 20th, 2013
9. April 9th, 2013

A Report on "Talks organized at IIT Kanpur"

IIM Kanpur chapter has been very active in organizing seminar talks by eminent scientists and researchers in the field of materials science for the benefit of graduate and undergraduate students in the field of materials science. Many of these talks were video recoded and are made available on website for the benefits of students. Some of the talks organized this year along with their abstracts are listed below:

1. **Speaker: Dr. Anshu Gaur, Sr. Process Engineer, R&D in Display Business Group (AKT) of Applied Materials, USA (Now at IIT Kanpur)**

Topic: Effect of Environment and substrate on Raman Scattering and Electronic properties of isolated single-walled carbon nanotubes

Date: May 3rd 2012

Abstract:

Carbon based nano-structures, fullerenes, carbon nanotubes and grapheme represent a class of materials with exceptional electrical and mechanical properties making them suitable for a wide range of commercial applications. Given that these nanostructures consist of only a handful of surface atoms, their properties are exquisitely sensitive to chanes in the environment thus making it critical to understand their fundamental physical properties at the nanoscale.

In this talk, I will describe the effects of molecular adsorption, either unintentional (from ambient environment) or intentional on resonance Raman scattering measurements of isolated single-walled carbon nanotubes and correlate them with their electronic properties. I will show that O2 adsorption from the ambient environment leads to charge transfer (and Fermi level shift below Dirac point) in metallic nanotubes while no significant effects of O2 adsorption are observed for semiconducting nanotubes. In metallic nanotubes, adsorption of O2 is enhanced by the presence of a supporting substrate accompanied by significant physical disorder. Variation and complexity in G-band of a metallic nanotube Raman spectrum is explained in terms of Kohn anomalies (KAs) that lead to broadening and softening of phonon modes, which stiffen and narrows as Fermi level is shifted away from Dirac point (due to charge transfer). I

also explored the effects of adsorption of NH3 on Raman scattering measurements and demonstrated a correlation of such effects of adsorption of Nh3 on Raman scattering measurements and demonstrated a correlation of such effects with charge transfer (Fermi level shift) in carbon nanotubes. These results clearly show that the Raman spectra of as synthesized metallic carbon nanotubes does not represent the intrinsic behaviour of metallic carbon nanotubes due to charge transfer effects arising from ambient O2 adsorption thus indicating that such effects should be carefully evaluated during comparisons with theoretical studies.

2. **Speaker: Dr. Kaustubh Kulkarni, Research Engineer, GM Global R&D in Materials Characterization and Modeling Group, India (Now at IIT Kanpur)**

Topic: Diffusion in Multicomponent Systems

Date: May 14th 2012

Abstract:

Diffusional interactions (effect of one component on the diffusion flux of the other) play important role in multicomponent diffusion kinetics. This work focuses on the experimental determination of such interactions in terms of interdiffusion coefficients and assessing the effect of diffusional interactions on the evolution of concentration profiles in a Multilayered Diffusion Assembly (MDA). Interdiffusion coefficients were measured in Cu-Ni-Zn ternary and Cu-Ni-Zn-Mn quaternary systems using Dayananda-Sohn analysis, which can be used for determination of interdiffusion coefficients in multicomponent system with a single diffusion couple experiment. In the Cu-Ni-Zn couples, interdiffusion fluxes of both Cu and Ni are enhanced up the concentration gradients of Zn whereas, in the Cu-Ni-Zn-Mn couples the interdiffusion flux of Ni is enhanced against the gradient of Mn and that of Cu enhanced against the gradient of Zn. Analytical expressions were derived for evolution of concentration profiles in a multicomponent single phase MDA. Simulations based on these expressions showed that the diffusional interactions play critical role in guiding depletion or enhancement of elemental concentrations in particular regions in the MDA. Need of interdiffusion data in some of the alloys and processes will also be discussed briefly.

3. **Speaker: Dr. Nilesh Prakash Gurao, University of Saskatchewan, Saskatoon, Canada (Now at IITK)**

Topic: Size effects in deformation behaviour of materials

Date: May 15th 2012

Abstract:

Crystallographic texture in polycrystalline materials are known to play an important role in tailoring suitable properties for various technological applications. In addition, the evolution of texture provides a profound basis to develop scientific understanding of physical processes occurring in the material during deformation and annealing. The deformation mechanisms in materials with conventional microcrystalline grain sizes are well documented. However, at extreme length scales, the deformation mechanisms are not well established. In this seminar, the analysis of deformation behaviour of face centre cubic (FCC) nickel at extreme grain sizes (nanometre and millimetre) will be presented vis-à-vis the evolution of texture. The deformation behaviour of nanocrystalline nickel is contributed by dislocation plasticity as well as grain boundary sliding. The consequent texture development is surprisingly similar to that observed in coarse grained (oligocrystalline) nickel and is different from the conventional microcrystalline grain size sample. These results have been understood on the basis of inhibition of cross slip at small grain sizes and the operation of planar slip in nanocrystalline sample and relaxation of strain constraint in oligocrystalline sample. The operative mechanisms at the extreme length scales have been validated using viscoplastic self-consistent simulations. The similarity at the two extreme length scales is explained on the basis of lower "*Grain Boundary Affected Zone*" at the extreme length scales.

In the second part of the talk, the generic nature of plastic deformation will be presented based on misorientation angle distributions for various metals subjected to deformation. These distributions show a scaling behaviour at the meso-scale. With the current observation, the scaling behaviour as determined from Scanning Electron Microscopy based Electron Back Scatter Diffraction (EBSD) indicates the universal nature of plastic deformation. The scaling behaviour is attributed to free dislocations (complete and partial) as well as incidental and geometrical dislocation boundaries in a deformed microstructure. In addition, the evidence of scaling in twinning dominated plastic deformation has been demonstrated for the first time. The implications of this intrinsic correlation between the misorientation distribution and plastic deformation on crystal plasticity models will be discussed.

4. **Speaker: Dr. Superb Misra, Fellow and Research Manager, University of Birmingham, UK**

Topic: A materials based approach to Tissue Engineering and Nanotoxicology

Date: June 13th 2012

Abstract:

Biomaterials is an interdisciplinary field incorporating the properties of matter, principles of engineering with applications in biology and biomedicine. Bone tissue regeneration is a major application of biomaterials, which includes the principles of cell transplantation, materials science, and engineering towards the development of biological substitutes that can restore and maintain normal tissue function. Tissue-biomaterials interactions have been studied over time with different objectives (Bio-inertness□Bioactivity□Regenerative functional tissues), reflecting the logical evolution of related disciplines. Tissues are multi-component and multi-functional, while in most cases current biomaterials are designed to replace only one predominant function. Therefore the requirements for optimal tissue regenerating implant is multifaceted including being a drug delivery vehicle or a biosensor besides serving as a mechanical support and a temporary extra cellular matrix. The first part of this talk is aimed to highlight various experimental techniques required to prepare such multifunctional implants.

Another aspect of materials science that has seen a rising interest in biomedicine is the use of nanomaterials. Nanomaterials are a unique class of materials that has size specific properties attained at nano domain, with applications in all aspects of science and technology. This increase in use of nanoparticles has led to a comprehensive and co-ordinated research into evaluating the toxicological potential of nanomaterials. In the second part of this talk, some of the key challenges involved in nanotoxicology will be discussed.

5. **Speaker: Dr. Nagesh S. Kini, Principal Scientist and Head, Centre of Excellence – Materials Science, Thermax Ltd. Pune**

Topic: Fuel Cell Technology: A perspective from Industry

Date: 5th October 2012

Abstract:

Fuel Cell Technology is yet to proliferate as an established renewable technology both in India as well as abroad. While systematic efforts with long term goals are on full swing abroad, it

lacks a credible identity as a renewable technology in India. Besides introducing the technology itself, this talk focuses on the current status of technology, challenges it is facing, expectations from Industry in the development of technology in India.

6. **Speaker: Dr. Bhaskar Majumdar, Scientist F, Defence Metallurgical Reserach Laboratory, Hydrabad**

Topic: Fe based Nanocrystalline Soft magnetic materials – Present Status

Date: 11th October 2012

Abstract:

Soft magnetic materials are characterised by negligible core loss that is governed by the ease of magnetization (low coercivity and high permeability) coupled with high saturation induction. These materials are used for transmitting the electrical energy as well as sensing the electrical signals. The conventional soft magnetic materials possess either high saturation induction (Fe-based alloys) or very low coercivity and high permeability (Ni-based alloys). Moreover high frequency applications of metallic soft magnets are limited due to their low resistivity.

The recent trend in developing the advanced soft magnetic materials is to incorporate nanocrystallline phases in amorphous matrix. These partially devitrified Fe-based alloys exhibit unique combination of soft magnetic properties i,e high saturation, Curie temperature and permeability coupled with very low coercivity. They are generally produced by preparing the amorphous ribbons through rapid solidification route followed by controlled heat treatment to obtain nanocrytalline phase in amorphous matrix. As most of the soft magnetic materials are used in the form of wound cores, long and wide ribbons are a prerequisite to prepare soft magnetic torroids. Of many rapid solidification techniques developed over the past few decades, planar flow melt spinning (PFMS) process has gained much importance commercially due to its capability of producing thin, wide and continuous ribbons for engineering applications.

DMRL has been working on the development of nanostructured ribbons of Fe(Co)-Si(Zr,Nb)-B-Cu based alloys for soft magnetic applications. The presentation deals with a brief review on the present understanding of nanocrystalline soft magnetic materials. Detailed experimental investigations in producing long and wide amorphous ribbons through planar flow melt spinning will be presented. The effect of different process parameters on the quality,

microstructure and magnetic properties of ribbons for different alloy compositions will be discussed in details.

7. **Speaker: Dr. Sivasambu Mahesh, Department of Mechanical Engineering, IIT Kanpur**

Topic: A theory of sub-structure formation in the grains of crystalline materials

Date: 30th January 2013

Abstract:

Dislocations in the grains of f.c.c. materials subjected to large plastic deformation arrange themselves in a systematic and typically, simple pattern. This pattern strongly depends only on the lattice orientation of the grains relative to the loading. This talk will begin with a technological motivation of the study of these patterns. An overview of the types of patterns in pure Cu, Al and their alloys observed and reported in the literature will then be given. A continuum theory of dislocation patterning will then be discussed and shown to predict patterns in agreement with experiments. Limitations of the continuum approach will then be outlined.

8. **Speaker: Dr. Deshdeep Sahdev, Department of Physics, IIT Kanpur**

Topic: A Case for Indigenous Technology

Date: February 6th 2013

Abstract:

It is an interesting and remarkable fact that every Nobel-prize winning piece of work in Experimental Physics has been carried out on apparatus which has been designed and developed by the physicist in question, be it Raman, Mossbauer or Binnig. This makes the question of how we build an instrumentational base for cutting-edge research in India relevant. I will discuss this in the context of several hi-tech instruments which our team has developed: Scanning Tunneling Microscopes for various applications, Physical Properties Measurement Systems & Gas Chromatographs --- to mention but a few. The talk will focus on how the expertise we have built up can help in facilitating research in materials and metallurgy at IITK.

9. **Speaker: Dr. Pradeep K. Rohatgi, State of Wisconsin and UWM Distinguished Professor, Director of UWM Centers for Composites and Advanced Materials Manufacture, University of Wisconsin-Milwaukee**

Topic: Lightweight metal composites, syntactic foams, self lubricating, self-healing and self-cleaning materials

Date: February 11th 2013

Abstract:

The talk will discuss advanced lightweight materials being developed at UWM Composite Center including metal matrix micro and nanocomposites, metal matrix syntactic foams, self lubricating, self healing and self cleaning materials. Many of these materials have micro and nanosize ceramic particles, including hollow microballoons dispersed in the matrix of metallic alloys. The talk will cover synthesis and processing of lightweight metal matrix composites for transportation applications including aerospace. The unique mechanical and physical properties of these composites will be described and their current and future applications in transportation will be presented. Special attributes, including energy absorption, self healing and self cleaning being incorporated in these materials, will be covered.

10. **Speaker: Dr. Daniel Fabijanic, Senior Research Fellow, Deakin University, Australia**

Topic: An overview: Surface Engineering and Corrosion Research at Deakin University

Date: March 07th 2013

Abstract:

An overview of the directions in Surface Engineering and Corrosion research at Deakin University are presented. A fluidised bed reactor technology platform has been established for the surface modification of materials by chemical vapour deposition (FBR-CVD) and thermo-chemical processes. A fluid bed reactor is a highly flexible apparatus allow the deposition and diffusion of a broad range of elements can be deposited (Ti, Cr, Si, Al, B, Mo, Ni, Cu) on Fe, Ni, Cu, Ti metallic alloy systems to produce surface layers with various structures including solid solutions, intermetallic and ceramics. Further, a fluid bed reactor can be used to modify powdered materials, such as the formation of nano-porous metal nitrides for energy storage material and the growth of CNTs on ceramic particles.

Corrosion research has focused on monitoring and prevention. In regard to monitoring a patented wire beam electrode method for localized corrosion measurement has been developed and has been utilized by over 20 R&D groups around the world, and testing methods have been developed for evaluating corrosion inhibitor performance and localized corrosion inhibition. Several corrosion mitigation strategies have been explored including; the use of ionic liquids as electrolytes for anodisation and also for corrosion control of Mg alloy stents used in the treatment coronary artery disease, green alternatives to chromate conversion coatings for corrosion protection of light metal alloys of magnesium and aluminium in saline solutions, and the corrosion protection of steel and aluminium alloys using thin films of rare earth inhibitor compounds (e.g. Ce, Ln) coupled with known organic inhibitors (e.g. carboxylates or organophosphates).

11. Speaker: Dr. Uday Racherla, Professor, IME Department, IIT Kanpur

Topic: Intellectual Property – A Valuable asset to cutting-edge research

Date: March 12th 2013

Abstract:

A patent is a form of Intellectual Property. It is a statutory privilege granted by a government to an inventor for a fixed period of years, to exclude other persons from manufacturing, using or selling a patented product or from using a patented method or process in exchange for disclosure of his/her invention. In order to be patentable, an invention must meet certain requirements and conditions. The types of Patents and the associated requirements for patentability depend upon the country that the inventor wishes to obtain patent in. Copyright Law is concerned with the protection and exploitation of the expression of ideas in a tangible form. At one time, the subject matter of Copyright Protection was limited to just artistic and literary works. As the technology has improved, Copyright Protection has been extended to technical drawings, maps, paintings, photographs, cinematographic works as well as 3-dimensional works such as sculptures and architectural works. More recently, Copyright Protection has also been extended to computer programs and databases, which are regarded as literary works or compilations of literary works. This talk touches upon the essentials of Patents, Patenting as well as Copyrights and explains the ensuing benefits to researchers. This talk will be followed by a separate hands-on session on Patent Search and Patent Analysis.

12. Speaker: Dr. Vijay Rawat

Topic: High temperature direct-thermal-to-electrical energy conversion using metal-semiconductor superlattices

Date: April 15th 2013 (scheduled)

Abstract:

Thermoelectricity is an attractive technology for solid state, direct and efficient conversion of thermal energy to electrical energy and hence, has huge potential in the field of waste heat recovery, particularly at high temperatures in the range of 600-900C. Efficient conversion of thermal to electrical energy at high temperatures could enable multiple applications e.g., waste heat recovery in furnaces and machinery, heat recovery in automobile engines leading to higher fuel efficiency, electricity generation through nuclear power for deep space exploration and naval vessels, and higher efficiency with concentrated photovoltaics. Current generations of thermoelectric materials are unstable at high temperatures, thereby not practical for abovementioned high temperature applications. In this presentation, a novel approach utilizing thermionic transport across metal-semiconductor superlattices will be presented which has the potential to yield energy conversion efficiencies much higher than delivered by current state-of-the-art thermoelectric materials. An important advantage of solid-state thermionic devices over conventional thermoelectric device is that the nanometer periodicity superlattice structure provides flexibility in independently tuning the thermal and electrical properties.

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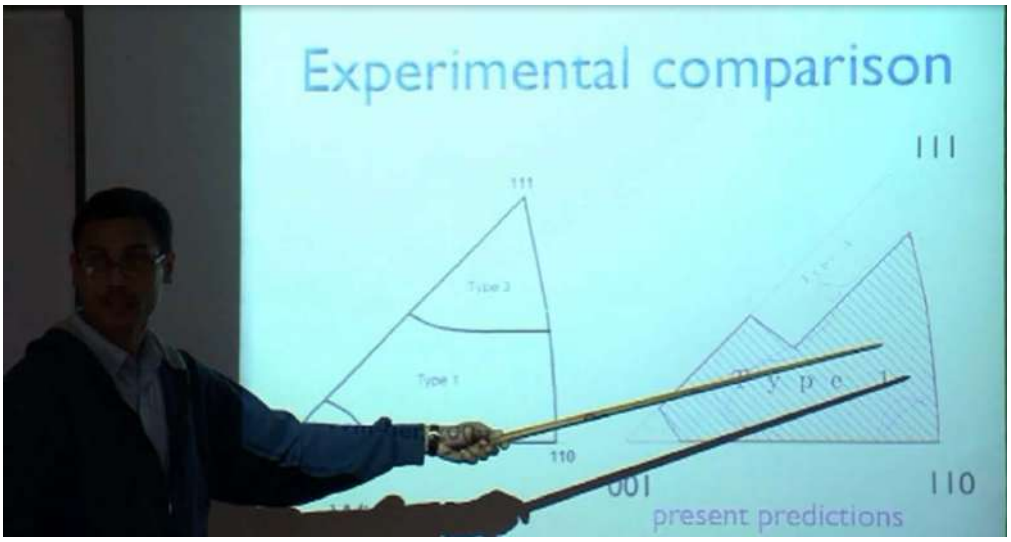

IIM
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Materials Engineering

A Report on Prof. N.K. Batra Metals and Materials Quiz

August 19, 2012 : Indian Institute of Technology, Kanpur

Prof. N. K. Batra Metals & Materials Quiz – 2012, was successfully organized jointly by the Department of Materials Science and Engineering, IIT Kanpur and IIM Kanpur chapter on Aug. 19, 2012, at Outreach Auditorium, Indian Institute of Technology, Kanpur.

This is the ***thirteenth time*** in a row that the metals and materials quiz has been organized at IIT Kanpur. This year, altogether 35 teams from 15 different schools/inter colleges from in and around Kanpur participated in the competition. This is the *first time in the history of Prof. N.K. Batra Metals and Materials Quiz* that such participation is witnessed! Following an initial elimination around, eight teams were short-listed for the final rounds. The inauguration witnessed lamp lighting and welcome by Prof. Sandeep Sangal, Head, Materials Science and Engineering Dept., IIT Kanpur followed by Dr. Kantesh Balani, Chair, IIM Kanpur Chapter.

The quiz started with an initial crossword as elimination round to select eight teams out of participating 35 teams. Quiz was hosted by Dr. Kaustubh Kulkarni and Dr. Shashank Shekhar. Secondary elimination dropped four teams and the rest four competed in the final rounds. The team comprising of *Kevin Joseph* and *Yash Gupta* from ***Methodist High School*** were the *winners* of **Prof. N. K. Batra Metals & Materials Quiz – 2012**. Whereas, *Kapil Sethi* and *Savneet Kaur Kalra* from ***Puranchandra Vidya Niketan*** were the *runner up*.

The convention of holding a popular technical lecture related to materials science and engineering every year during Prof. N.K. Batra Metals and Materials Quiz, was continued with a lecture by Dr. G.K. Dey from BARC (Bhabha Atomic Research Center, Mumbai). Prof. Anish Upadhyaya introduced the guest speaker. Dr. G.K. Dey's simulating talk on "***World of Metals***" was highly appreciated by students and teachers alike. In the end, it was Prof Kallol Mondal who delivered the spirited vote-of-thanks. This concluded the successful conduct of Prof. N.K. Batra Metals and Materials Quiz 2012.

The contingent of Prof. N.K. Batra Metals and Materials Quiz on Aug. 19, 2012.

Dr. G.K. Dey from BARC, Mumbai, delivering a talk on “World of Metals” during Prof. N.K. Batra Metals and Materials Quiz held on Aug. 19, 2012.

Students solving ‘cross-words’ during Prof. N.K. Batra Metals and Materials Quiz held on Aug. 19, 2012.

Winners of the Prof. N.K. Batra Metals and Materials Quiz held on Aug. 19, 2012: *Methodist High School*

A Report on "METAXTEMPORE-2012"

October 16, 2012 : Indian Institute of Technology, Kanpur

Metaxtempore'12 was successfully organized by the IIM Kanpur Chapter on 16th October, 2012 at the Lecture Hall Complex (L10) of Indian Institute of Technology, Kanpur.

It was an extempore competition based on Metallurgical topics. A total of 10 students from IIT Kanpur and Chhatrapati Sahu Ji Maharaj University (CSJMU), Kanpur participated in the event. Students were given to choose an arbitrary topic from a total of 60 topics and speak for a maximum of 5 minutes. Dr. Kaustubh Kulkarni and Dr. Anshu Gaur from the Department of Materials Science and Engineering of IIT Kanpur were the honourable judges for the event.

The winner was Ms. Madhumanti Mandal from IIT Kanpur. The runner up prize went to Ms. Vasundhara Singh from CSJMU and the third prize was awarded to Mr. Amit Dravid from CSJMU.

Dr. Kaustubh Kulkarni and Dr. Anshu Gaur delivered a speech on what are the necessities of an extempore event and how to present a scientific topic within a limited time scale.

Metaxtempore'12 concluded with a vote of thanks from judges and the organizers.

We greatly appreciate the contribution from the organizing team of IIM Kanpur Chapter which comprises of Mr. Sumit Ranjan Sahu (Coordinator, IIT Kanpur), Ms. Akansha Mohan (Coordinator, CSJMU), Mr. Abhinav Varshney (Event Coordinator), Mr. Pradyut Sengupta and Mr. Koushik Sikdar (Joint Creative Head) and Mr. Satish Kanhed (Publicity Coordinator) without whom the event would have not been possible.

Students Participating in Metaxtempore'12

Ms. Madhumanti Mandal receiving the 1st prize and certificate from Dr. Kaustubh Kulkarni

Ms. Vasundhara Singh receiving the 2nd prize and certificate from Dr. Kaustubh Kulkarni

Mr. Amit Singh receiving the 3rd prize and certificate from Dr. Anshu Gaur

Poster of Metaxtempore'12 Event

A Report on
A Talk on "Frontiers in Mechanical Behaviour of Materials"
January 16, 2013 : Chhatrapati Sahu Ji Maharaj University, Kanpur

A Talk on "Frontiers in Mechanical Behaviour of Materials" was successfully organized by the IIM Kanpur Chapter on 16th January, 2013 at MSME building of Chhatrapati Sahu Ji Maharaj University, Kanpur (CSJMU).

Dr. Nilesh Prakash Gurao from the Department of Materials Science and Engineering of IIT Kanpur was the honourable speaker of the event. He covered almost every aspect of the topic with descriptive and interesting explanations. A total of 25 students from CSJMU attended the lecture. Dr. Nilesh Prakash Gurao delivered a very interactive and informative lecture which drew marked attention of the audience. The students were very attentive and noted their points of interests. In spite of having a parallel session running on that very day at CSJMU, the cooperation exhibited by students is deeply acknowledged. The lecture was followed by interactive session with Dr.N.P.Gurao. The students were keen to learn the nitty-gritty of fundamentals of mechanical behaviour of materials from Prof. Gurao. Sir was very impressed to see the eagerness of students and motivated them to study Material Science and Engineering thoroughly.

The event concluded with refreshments and a photo session with the students.

We greatly appreciate the contribution from the organizing team of IIM Kanpur Chapter which comprises of Mr. Sumit Ranjan Sahu (Coordinator, IIT Kanpur), Ms. Akansha Mohan (Coordinator, CSJMU), Mr. Abhinav Varshney (Event Coordinator), Mr. Pradyut Sengupta and Mr. Koushik Sikdar (Joint Creative Head) and Mr. Satish Kanhed (Publicity Coordinator) without whom the event would have not been possible.

Dr. Nilesh Prakash Gurao delivering a talk on "Frontiers in Mechanical Behaviour of Materials" at CSJMU

Students of CSJMU attending the talk

Group photo with Dr.N.P.Gurao and students

A Report on "METAQUIZER-2013"

April 09, 2013 : Chhatrapati Sahu Ji Maharaj University, Kanpur

Metaquizer 2013 was successfully organized by the IIM Kanpur Chapter on 9th April, 2013 at the Department of MSME at CSJM University, Kanpur.

It was a quiz contest based on Metallurgical topics. A total of 35 students from Chhatrapati Sahu Ji Maharaj University (CSJMU), Kanpur participated in the event. There was a written test consisting of MCQ questions. After which 14 students qualified for the main quiz rounds. They were divided into 7 groups of 2 students each. A total of 6 different rounds were there which included visual questions also. The audience was very bright and supportive. They answered almost every question those were passed or wrongly answered by the teams. At the end winners were declared. Dr. Nilesh Prakash Gurao from the Department of Materials Science and Engineering of IIT Kanpur was the honourable guest and speaker for the event. He also awarded prizes to the winners.

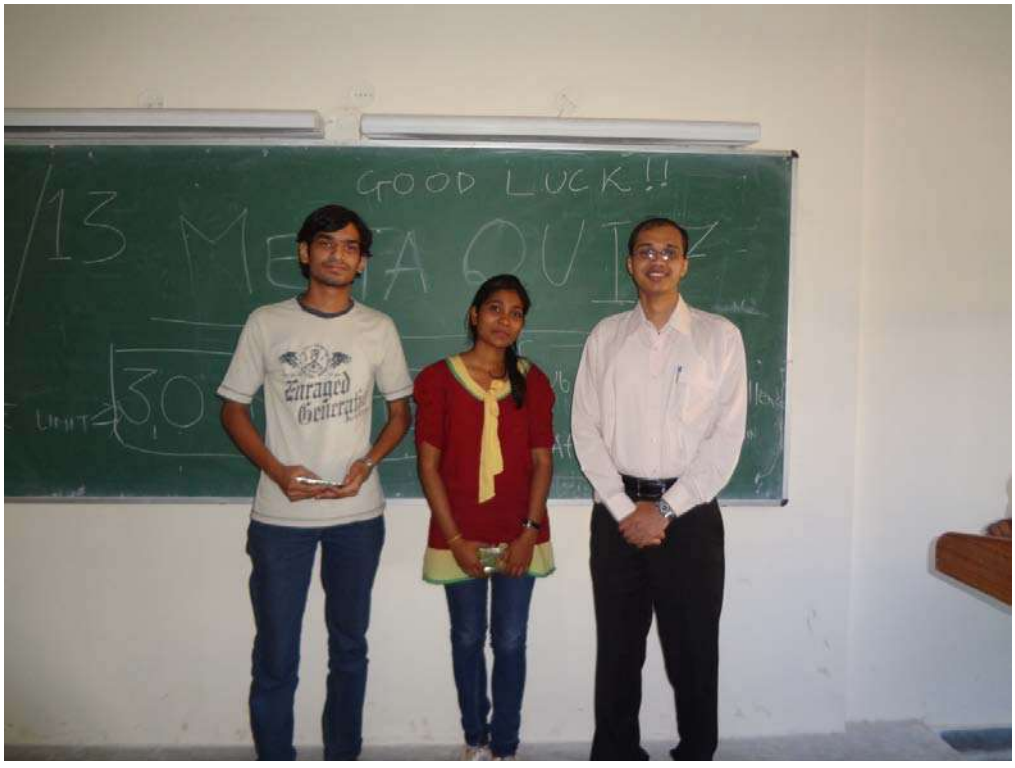
The winners were Chaman Srivastava and Ayush Mishra. The runner up prize went to Kushagra Singh and Prasun Agnihotri and the third prize was awarded to Mukesh Sharma and Akhilesh Kumar.

Metaquizer 2013 concluded with a vote of thanks from the organizers followed refreshments and photo session with the students.

We greatly appreciate the contribution of the organizing team of IIM Kanpur Chapter which comprises of Ms. Akanksha Mohan (Coordinator, CSJMU), Mr. Amit Singh, Mr. Sumit Ranjan Sahu (Coordinator, IIT Kanpur), Mr. Abhinav Varshney (Event Coordinator), Mr. Pradyut Sengupta and Mr. Koushik Sikdar (Joint Creative Head) and Mr. Satish Kanhed (Publicity Coordinator) without whom the event would have not been possible.

Students Participating in Metaquizer 2013

Winners receiving 1st prize from Dr. Nilesh Prakash Gurao



Runners Up of Metaquizer 2013

A Report on "Lab-visit by CSJMU students"

March 09, 2013 : IIT, Kanpur

A Lab-visit was organized by the IIM Kanpur Chapter on 9th March, 2013 for the benefit of students of CSJM University. For many of the students it was a first exposure to various equipments like, TEM and XRD. As many as 35 students from CSJM University participated in this event. Students spent the whole day understanding and analyzing various equipments in various laboratories of IIT Kanpur.

We greatly appreciate the contribution of the organizing team of IIM Kanpur Chapter which comprises of Ms. Akanksha Mohan (Coordinator, CSJMU), Mr. Amit Singh, Mr. Sumit Ranjan Sahu (Coordinator, IIT Kanpur), Mr. Abhinav Varshney (Event Coordinator), Mr. Pradyut Sengupta and Mr. Koushik Sikdar (Joint Creative Head) and Mr. Satish Kanhed (Publicity Coordinator) without whom the event would have not been possible.

Students keenly looking at the micrograph on the computer screen attached to an optical Microscope

Student taking a look at Transmission Electron Microscope (TEM)

Students being introduced to X-Ray Diffractometer

Students at the Laboratory for Biomaterials

STATEMENT OF ACCOUNT (as on 31/03/2013)

Kanpur Chapter of Indian Institute of Metals

Financial Year 2012-2013 (From 01 Apr 2012 to 31 Mar 2013)

Bank Account Number: 10426004917 (at SBI, IIT Kanpur)

Details of Receipt

S. No.	Date	Particulars	Amount (Rs.)
1	01/04/2012	Cash in hand	34570.17
2.	17/10/2012	Chapter Grant	8700.00
3.	30/06/2012	Interest credit	1184.00
4.	31/12/2012	Interest Credit	1195.00
Total Receipt			**45649.17**

Details of Expenditure

S. No.	Date	Particulars	Amount (Rs.)
1.	14/04/2012	Momento	300.00
2.	15/04/2012	Snacks	960.00
3.	23/04/2012	Snacks (campus school)	120.00
4.	14/06/2012	Postal Charges	884.00
5.	17/07/2012	Stationary	640.00
6.	02/08/2012	Prizes (books)	2030.00
7.	08/08/2012	Postal Charges	169.00
8.	18/08/2012	Caps and Momentos	3800.00
9.	07/09/2012	Refreshments	80.00
10.	22/09/2012	Snacks	150.00
11.	08/10/2012	Postal Charges	67.00
12.	22/10/2012	Postal Charges	39.00
Total Expenditure			**9239.00**

CLOSING BANK BALANCE

Total cash in hand on 31.03.2013: Rs. 36410.17 (SB a/c)

ASSETS: 1. Special term Deposit, SBI, IIT Kanpur: Rs.30, 000 (reinvested)

2. Special Term Deposit, SBI, IIT Kanpur: Rs.1, 00,000 (reinvested)

(These term deposits will be reinvested)

Kaustubh Kulkarni
Treasurer, IIM Kanpur Chapter

Shashank Shekhar
Secretary, IIM Kanpur Chapter

Kantesh Balani
Chairman, IIM Kanpur Chapter

STATEMENT OF ACCOUNT (as on 31/03/2013)

Student Affiliate Chapter at Kanpur Chapter of Indian Institute of Metals

Financial Year 2012-2013 (From 01 Apr 2012 to 31 Mar 2013)

Bank Account Number: 10426004917 (at SBI, IIT Kanpur)

Details of Receipt

S. No.	Date	Particulars	Amount (Rs.)
1	01/04/2012	Cash in hand	5359.00
2.	17/10/2012	Student Chapter grant + Student Affiliate Chapter Grant	24050.00
Total Receipt			**29409.00**

Details of Expenditure

S. No.	Date	Particulars	Amount (Rs.)
1.	06/10/2012	Prizes	780.00
2.	12/10/2012	Xerox and Certificates	390.00
3.	16/10/2012	Refreshments	205.00
4.	16/01/2013	Taxi expenditure for speaker	250.00
5.	16/01/2013	Refreshments during talk at CSJMU	434.00
6.	16/01/2013	Honorarium to Dr. Nilesh Gurao	1000.00
7.	09/03/2013	Refreshments and food for lab visit	1200.00
8.	09/03/2013	Charges for Lab visit staff and help	2500.00
9.	09/03/2013	Lab visit Charges for 40 students	10000.00
10.	09/0392013	Conveyance	126.00
11.	25/03/2013	Certificates	105.00
12.	25/03/2013	Xerox	10.00
Total Expenditure			**17000.00**

CLOSING BANK BALANCE

Total cash in hand on 31.03.2013: Rs. 12409.00 (SB a/c)

Kaustubh Kulkarni
Treasurer, IIM Kanpur Chapter

Vivek Verma
Faculty Advisor, Student Affiliate Chapter

Shashank Shekhar
Secretary, IIM Kanpur Chapter

Kantesh Balani
Chairman, IIM Kanpur Chapter

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