

## Chapter-Sponsored Events on Campus

### Clemson University

This semester, our chapter decided to hold a welcome back ice cream social for anyone within the department as an opportunity for old friends to see each other again and to recruit new members. To add a fun science twist to this event, the ice cream was made using liquid nitrogen. This liquid nitrogen ice cream social involved about ten of our members, and we used homemade ice cream mix and liquid nitrogen to make vanilla ice cream. Instead of using an ice cream machine we just blended the mixture with liquid nitrogen until it was the right consistency. It was delicious!



In an attempt to get everyone to relax around mid-term exams, a bowling night at the student union was suggested to put everyone at ease. For this event, four bowling lanes, one ping-pong table, and a pool table were rented out for three hours on a weeknight, and all of the MA members were invited to attend. This turned out to be a really fun event that helped everyone relax around a stressful time in the semester.



The Clemson University Material Advantage Chapter invited Prof. Seetharaman from Carnegie Mellon to give an undergraduate seminar 12 – 13 October 2011. During this visit, Dr. Seetharaman gave a talk on "Interfacing Chemical and Physical Metallurgy to both the Materials Advantage student chapter (26 students attending) and a course on materials manufacturing (MSE 319, 91 students). Both of these talks were provided by an AIST fellowship (Elliot Lectureship) awarded to Dr. Seetharaman.



[Dr. Seetharaman with the Materials Advantage student chapter after his talk.]

Sarah Kendrick, President  
Clemson University MA chapter

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## **Pohang University of Science and Technology (MSE of POSTECH) Pohang, Korea**

### **The Exploration of the MSE & Camp in the MSE**



First, we sent information about the program to top high school students through all schools in the country, particularly those specializing in science as a priority area. Students selected by POSTECH upon recommendation by their schools received letters of invitation to POSTECH.

Those selected were introduced to the campus life and the fundamental research methods in materials science and engineering. Finally, we arranged their meetings with the leading academic staff in the Department of Materials Science and Engineering as well as with POSTECH graduate school students.



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## Iowa State - Oobleck Sidewalk

Each year, the Iowa State University Chapter of Material Advantage (ISU MA) organizes an Oobleck Sidewalk, much to the delight of the children in the area. "Oobleck" is a simple mixture of approximately equal parts cornstarch and water. This combination is interesting because it is a non-Newtonian fluid and shear thickens. When pressure is applied, the Oobleck comes together like a solid; without any pressure, it flows like a liquid. An 8'x4' wood frame filled with Oobleck makes a sidewalk where it is possible to run across without any trouble, or go slowly and sink down into it. Of course, it's always fun to pick it up and play with it as well. All that's necessary other than the wood frame is:

- Approximately 10 cases of cornstarch (easily preordered at Walmart)
- Access to water
- Five gallon buckets (to mix batches of Oobleck in)
- Plastic sheeting (to line the wood frame)
- Small plastic kiddie pool (to wash hands and feet off in)
- Hand towels (to dry off with)
- Trash bags (for disposal)





[Left Photo (L to R): Logan Kroneman, Alex Bruce, Sam Reeve, Hannah Doyle]

[Right Photo (L to R): Alex Bruce, Hannah Doyle, Logan Kroneman]

ISU MA members enjoy the Oobleck Sidewalk as much as the kids do (evident in the photos). Hopefully you will too!

Sam Reeve  
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## The University of British Columbia

The University of British Columbia Materials Engineering Joint Student Chapter (JSC) of Materials Advantage hosts a wide variety of events on campus that cover both the social and technical aspects of student life. Over the last year we have hosted competitions and social events such as, “The Materials Engineering Pumpkin Carving Contest” and “Gingerbread Material House Building” along with technical seminars. Our technical seminar series this past year included a Materials Engineering oriented industry night.

On January 26, 2012, the JSC hosted “The 4<sup>th</sup> Annual Materials Engineering Industry Night”. Over the last couple of years this has become one of the largest events that the JSC organizes. The event was a big success, attended by 96 students, faculty, and industry professionals. Three presenters, each with their own unique career path in the Materials Engineering profession, shared their knowledge and perspective with the students. In addition, the students had a chance to mingle with the industry guests over refreshments and receive helpful tips regarding career and personal development. The chapter received positive feedback from students, faculty and industry guests, and is looking forward to the events 5<sup>th</sup> anniversary next year.



Figure 1. Students listening intently during the first of three presentations during “The 4<sup>th</sup> Annual Materials Engineering Industry Night”.



Figure 2. Students, faculty and industry guests mingling during “The 4<sup>th</sup> Annual Materials Engineering Industry Night”.

Lina Grajales

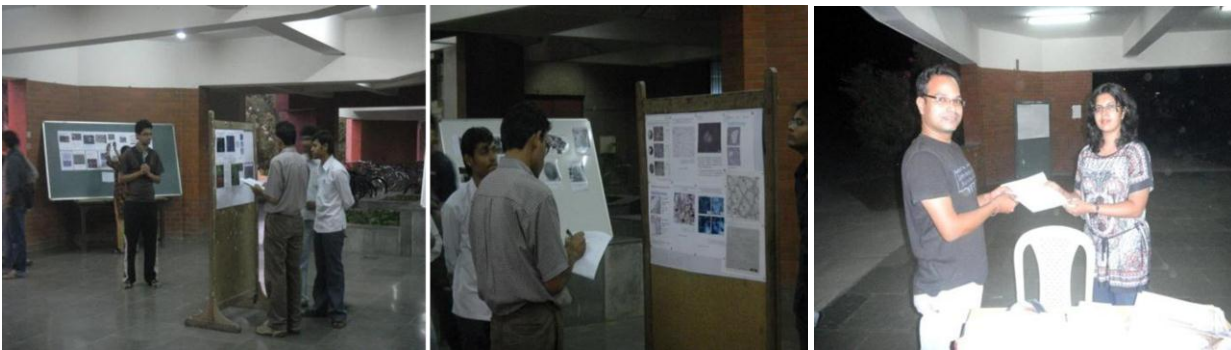
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## Indian Institute of Technology, Kanpur

The **MA @ IIT Kanpur** has made a whopping growth of 60% during the Fall 2009 Membership Challenge pushing the total membership count to 53 that let the MA @ IIT Kanpur to win the award of “Most Students Recruited” along with a prize of 500 USD from the Material Advantage charter. Towards the same, MA @ IIT Kanpur has organized host of activities on a big scale such as (Flyers shown):

1. **Occhioliino 2011:** A Micrography Contest with participation of more than 112 entries in various sections of optical-, SEM-, TEM- and other- (such as Raman, AFM, etc) micrography techniques.



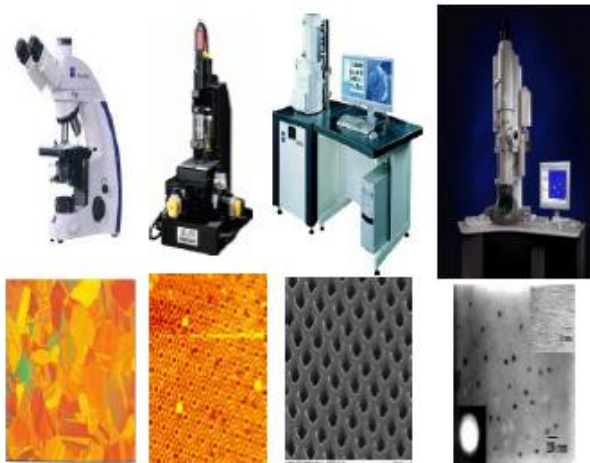
First two winners will receive Attractive prizes in each category & Certificates to all the selected entries.



**MATERIAL ADVANTAGE  
at IIT Kanpur**  
...the advantage is beyond materials

**"Occhiolino 2011"**  
Micrography Contest  
19<sup>TH</sup> OCTOBER 2011

## Categories



- Optical Microscopy
- Scanning Electron Microscopy
- Transmission Electron Microscopy
- Special Techniques (AFM,STM,Flourescence)

First two winners will receive Attractive prizes in each category & Certificates to all the selected entries.

Display at LHC Foyer - 3:00-6:00 pm

## 2. **ROCKETS:** A Technical Research Newsletter.

**MA@IIT Kanpur** ...where advantage is beyond materials!

**ROCKETS**  
Research Overcoming Challenges in Engineering Technology and Sciences

**WEARABLE ELECTRONICS**

Wearable Electronics made of natural cotton fibers (yarns): Now a possibility! It is useful for making electronic circuits (Fig.1) due to their highly attractive properties .

**Fig.1: Organic Electrochemical Transistors [1]**

drain  
source  
gate

**Attractive Features**

- Good mechanical properties
- Relatively cheap
- Process easiness
- Natural resources

**Application of these Electronic appliances purely depends on the resistivity of the cotton yarns**

- Passive Devices "Resistors"
- Active Devices "OECS\*, OFETS\*"

**Active devices were made by raising the conductivity of the cotton fibers...**

Mixing with the conducting polymers

- $\pi$ - conjugated polymers
- PEDOT " Polythiophenes"
- Poly(3,4-ethylenedioxi thiophene)

Incorporating with the metallic nano-particles

- Particles like Au, Ag & Pt (High  $\sigma$ )
- Incorporation of CNTs ( Carbon Nanotubes)

Drastic change in Electrical & Mechanical properties is noticed after incorporation of Au NPs & PEDOT(Figs.2&3)

**Fig.2: Stress vs Strain curve for cotton Yarn [1]**

Stress (MPa)  
Strain (%)

Plain cotton  
Cotton + Au NPs  
PEDOT

**Fig.3: Variation of log, (Resistivity, Young Modulus, Stress at break, Elongation to break) with the incorporation of different materials in Cotton yarn Plot made by the data [1]**

Properties (in log.)

Plain Cnt  
Cot+AuNPs  
Cot+PEDOT  
Cot+AuNPs+PEDOT

Resistivity (ohm)  
Young Modulus (GPa)  
Stress at break (MPa)  
Elongation to break (%)

**Date: Feb. 1, 2012**

**Contributed by: Neha Gupta (Ph.D) MSE & Soumitro Mahanty (Ph.D) MSE**

Ref.: [1] Organic Electronics 12 (2011) 2033-2039

 **Material Advantage @ IIT Kanpur**  
Presents  
**Extempore'12** 

**Who can Participate?**  
Any one. Basic knowledge in Materials science is sufficient

**Any registration fee?**  
No. Please walk-in

**What the event is ?**  
you have to speak for 2 minutes on given topic

**Is there any screening round?**  
No, you can battle up to the end

**Venue:** FB -421, MSE Seminar Hall  
**Send your application**  
[ma.iitk12@gmail.com](mailto:ma.iitk12@gmail.com)

**Date:** 22<sup>nd</sup> Feb 2012, Wednesday

**Is the event is technical or fun based ?**  
Both

**If I came late?**  
No problem. You can come between 5: 00-06.30 p.m

 Win Attractive prizes & Certificates



3. **MA Xtem pore '12**: an extempore competition in which participants were given some interesting topics to speak upon for 3 minutes. Topics given for the competition were such that one could speak both technical and philosophical about them.

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**MA student members presenting a talk on Nanotechnology to high school students of Kendriya Vidyalaya High School in Chennai, India on 13<sup>th</sup> February, 2012**

The student members of MA Student chapter of IIT Madras presented talk on Nanotechnology to high-school students of Kendriya Vidyalaya High School in Chennai on 13<sup>th</sup> Feb. It was brief talk on nanotechnology. About 100 students with 6 faculty members of the school were present.

The talk comprised of explaining the nano-length scale through various comprehensible examples in day today life. The revolution in Nanotechnology in all field of sciences and engineering were explained. The predictions of advances in Nanotechnology by eminent scientists and use of Nano particles in ancient ages were also elucidated. The range of fields for nanoparticles from medicines to mechanical systems and how mankind has benefited by them was the main attraction of the talk. The nanotechnology in nature such as lotus-leaf effect, lizards walk (gecko tapes) etc was presented.

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