

This is a schedule of what we have planned for **UNT's ASM** 2011 summer camp

All three days July 18th, 19th and 20th will begin at 9:30am and end at 5:00pm

Lunch and snacks will be included for all three days during the camp.

For those of you coming from outside the Dallas Fort Worth area:

The camp will be held at UNT's engineering campus, **Discovery Park**, located 4.5 miles north of the main campus. I have included a map of the area with both campuses marked. The address for **Discovery Park** is 3940 N. Elm St. Denton TX, 76207.

Transportation:

Everyone will need to plan coming and going from the camp every day.

Parking at Discovery Park will be available for free for those driving in. A map is included at the end.

If you are coming by train from Dallas to Denton, take the DART Green line north toward Denton then transfer to the A-Train line and take to Downtown Denton station. We can arrange for a morning pick up and evening drop off at the Downtown Denton station, but I need to know in advance.

If you are staying in a hotel near the campus I can arrange for a morning pick up and evening drop off but I need to know in advance.

Housing:

This year we are not able to offer housing in the UNT dorms. If you need a hotel for your stay in there are many only a few miles away from Discovery Park at the intersection of Interstate 35 and Highway 380/ University Drive.

Paperwork:

Parents or Guardian's need to sign a liability waiver for any student under the age of 18. This can be done before the camp day but students without this signed form will not be allowed to participate. This form is the last page of the packet.

Parent Tour

For the parents who wish to have a tour of the department and speak with the organizers of the camp Monday from 9:30 to 10:30am we will be available.

Day 1

8:45am to 9:30am	Sign in, get name badges and T-shirt
9:30am to 10:50am	Lab tour
11:00am to 12:20pm	Electric Materials
12:30pm to 1:50pm	Lunch
2:00pm to 3:20pm	Laser Processing
3:30pm to 5:00pm	Polymers

Day 2

9:30am to 10:50am	Theoretical and Experimental Engineering
11:00am to 12:20pm	Glass and Ceramics
12:30pm to 1:50pm	Lunch
2:00pm to 3:20pm	Tribology
3:30pm to 5:00pm	Materials Processing

Day 3

9:30am to 10:20am	Cool hands on fun time!!!!
10:30am to 12:20pm	Energy and Materials
12:30pm to 2:20pm	Lunch
2:30pm to 5:00pm	Guest speakers, from the university and industry

Module Details

Lab Tours

This section of the camp will show our entire research laboratories here in the Materials science department. Walking through the labs the students will see and talk with the graduate and PhD students working in the department on various research projects. We will show our metals, ceramics and polymer processing labs along with our microscopy and characterization instruments. Students in the camp will have the opportunity in other modules to use these instruments and microscopes in-depth to answer real questions we face in our research work here at UNT.

Electric Materials

With the continual drive of technological advancement the desire to develop new applications for semiconductors, insulators, and optical materials became an important issue for engineers and scientists. In this module students will study the optical and electrical phenomena of certain materials as a response of an applied electric field. A visual representation of this effect will be presented by photoluminescence measurements using $\text{Zn}_2\text{SiO}_4:\text{Mn}$ (Zinc Silicate Phosphor) as the excitation source.

Laser Processing

The LASER¹ is one of the greatest innovations of 20th century and its continued development has been an exciting chapter in the history of science, engineering, and technology. As versatile source of “pure” energy in a highly concentrated form, lasers have become attractive tools and research instrument with potential for applications in an extraordinary variety of fields. In this module, we demonstrate how Laser is used in materials synthesis and processing and the main emphasis of this module is to improve the surface properties of material. Particularly in this regards we find Lasers as the possible tool for surface engineering².

¹LASER - Light Amplification by Stimulated Emission of Radiations

²Surface engineering means the design and modification of a surface to enhance hardness, wear resistance, heat resistance, or some other property by using laser.

Polymer Module

The term polymer is sometimes taken to refer to plastics, but it actually encompasses a large class comprising both natural and synthetic materials with a wide variety of properties. Because of the extraordinary range of properties of polymeric materials, they play an essential and ubiquitous role in everyday life. In the polymer module, students will be introduced to different type of polymers and ongoing research on

polymers that can significantly improve our life. The polymeric smart materials like shape-memory polymers that have the ability to return from a deformed state (temporary shape) to their original (permanent) shape are fun and have wide industrial impact. We will also introduce biodegradable plastics that decomposes in natural aerobic and anaerobic environments. By the end of this module students will be able to appreciate the role of polymeric material in our day to day life to high-tech industrial applications.

Theoretical and Experimental Engineering

Engineering is the skill and profession of applying knowledge and experience to improve life. An engineer applies science and mathematics to find optimized solution to real life problems. This module focuses on the fundamentals that students have gone through in the school and will correlate what we observe and feel in real life to engineering. By the end of this module students will be capable enough to appreciate that pure mathematical theories are the song of logical ideas in the real world of engineering.

Glass and Ceramics

The “Glass and Ceramics” module is a concise and interesting introduction to the world of glass and ceramics, including their definition, processing and applications. Both the similarities and differences between glass and ceramics are included in the module. How does a superconductor work? What are the advantages of ceramic knives compared with a traditional metal knife? How to make glass in the lab and how to make it stronger? All the answers will be founded in demonstration videos and hands-on experiments of the module.

Tribology

Tribology in materials science is the study of interactions between two moving surfaces. The systems properties that pertain to this study include friction, lubrication, wear and how these properties change with the material over time. These principals are also important in the study of micro-electro-mechanical systems (MEMS), which are utilized in many new technological systems that we rely on every day. Demonstrations and hands on experiments will open the eyes of the students to the fundamentals of this field of study to inspire continual improvement in engineering.

Materials Processing

We have a lot of natural resources around us which we need for our survival. However, we need to process them into something usable according to our requirements otherwise they are just pieces of rocks, trees or hunks of metal. This module aims to help students understand the various processing steps involved in getting a final

product. By taking a sample prepared using LASERs and then changing the surface with LARER modification. Students will also develop insights into different physical properties of materials by using furnaces to show differences in melting temperature.

Energy and Materials

How do we generate and use energy? This question has been continuously explored since our ancestors first used fire to cook meat. Now engineers have found many ingenious ways to harness the power from fire, water, wind, the ground below you and the Sun. We will show and explain devices and machines such photovoltaic solar cells, wind turbines and heat engines and display how this power is harnessed and used for our benefit.

Guest speakers, from the university and industry

Dr. Rick Reidy

Interim Chair Engineering Technology Department and Professor of Materials science

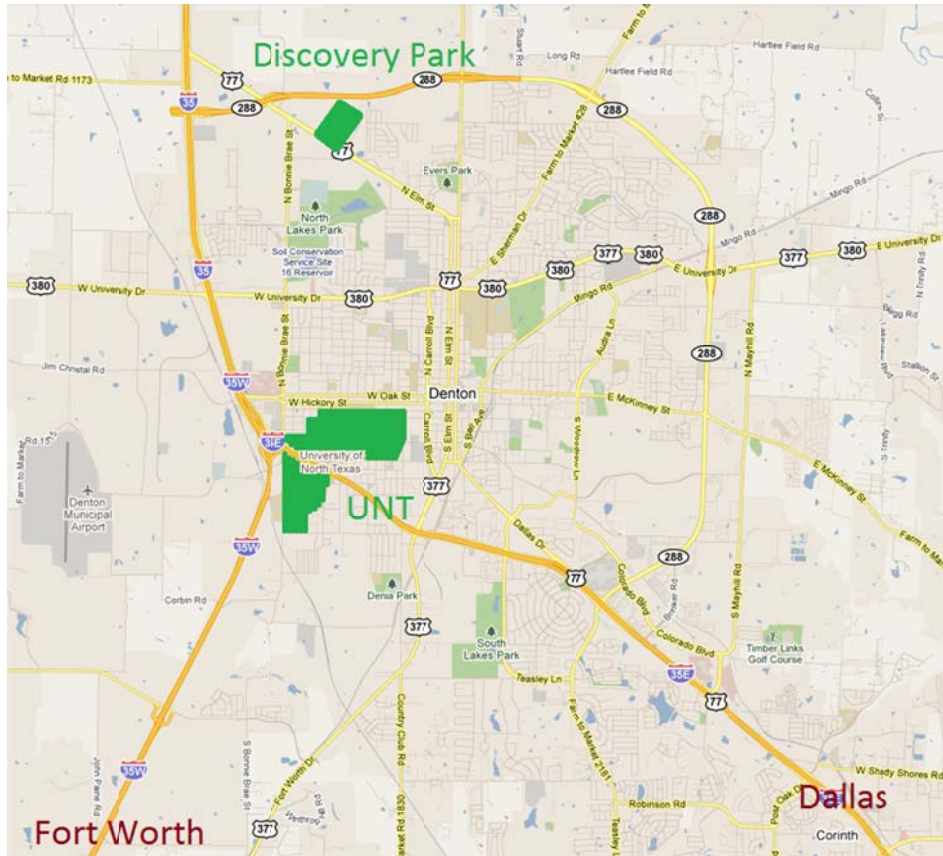
Michael Beaton

ASM North Texas chapter

More TBA...

Maps and parking

I have two maps below: Denton, UNT and Discovery Park and Discovery Park with directions to parking next to the Materials Science Department



University of North Texas

Waiver of Liability and Hold Harmless Agreement

In consideration for the expectation of publicity and acknowledgement for _____ (property) and any valuable consideration, I hereby release, waive, discharge and covenant not to sue the **University of North Texas**, the **Board of Regents** of the **State of Texas**, their officers, servants, agents, or employees of UNT from any and all liability, claims, demands, actions, and causes of action whatsoever arising out of or related to any loss damage, injury including death that may be sustained by me, or to any property belonging to me, whether caused by the negligence of UNT, or otherwise for the use of images of property which I own and or have full authority to license for such uses, regardless of whether said use is made in conjunction with my own name, company name, or with a fictitious name, or whether said use is made in color, black and white, video, or otherwise, or other derivative works made through any medium. I waive any right that I may have to inspect or approve the photos or finished versions incorporating the photos, including written copy that may be used in connection therewith.

Voluntary Assumption of Risk of Loss

To the best of my knowledge, I can fully participate in any publicity. I am fully aware of the risks and hazards connected with the activity including, but not limited to, the risks as noted herein, and I hereby elect to voluntarily participate in publicity and to engage in publicity may be hazardous to me and property. I voluntarily assume full responsibility for any risks of loss, property damage, illness or personal injury, including death, that may be sustained by me, or any loss or damage to my property, as a result of being engaged in publicity.

I agree to indemnify and hold harmless UNT from any loss, liability, damage, or costs, including court costs, and attorney's fees that may be incurred due to my participation in publicity.

I understand that UNT will not be responsible for any medical costs associated with any injury that I may sustain while participating in publicity.

I understand that I should and am urged by UNT to obtain adequate health and accident insurance to cover any personal injury or property loss to myself or property that may be sustained during publicity.

It is my express intent that this agreement shall bind the members of my family and spouse, if I am alive, and my heirs, assigns, and personal representative, if I am not alive, shall be deemed as a release, waiver, discharge, and covenant not to sue UNT and that this agreement shall be construed in accordance with the laws of the **State of Texas**.

In signing this release as a participant in publicity, I certify that I have read the foregoing waiver of liability and hold harmless agreement, I understand it, and I sign it voluntarily as my own free act and deed; no oral representations, statements, or inducements, apart from the foregoing written agreement, have been made.

I am at least **18 years of age**, and fully competent; or if under 18 years of age, my parent or legal guardian's approval and signature has been obtained; and I execute this release for full, adequate, and complete consideration fully intending to be bound by the same.

IN WITNESS THEREOF, I have hereunto set my hand on this _____ day of _____, 20____

Participant's signature (required)

Participant's name (please print)

Parent or Guardian's signature (if necessary)

witness

witness

witness