

Texas State University-San Marcos

A member of the Texas State University System



NAC

**NANOMATERIALS
APPLICATION CENTER**

NANOTECHNOLOGY OVERVIEW

07 August 2008

txstate.edu

■ CENTRAL LOCATION



1,412,271
■ Texas State is located in San Marcos, halfway between Austin (30 miles) and San Antonio (45 miles).

■ San Marcos is situated on the edge of the legendary Texas Hill Country.



ABOUT TEXAS STATE

■ Texas State University-San Marcos is a **premier**, student-centered public university offering baccalaureate, masters and doctoral degrees to students on a traditional **residential** campus.

■ **Founded:** 1899 as SWT State Normal School

■ **President:** Dr. Denise M. Trauth

■ **Campus area:** 427 acres in main campus (*including 4,322 acres of farm, ranch & recreational areas*)



Texas State University-San Marcos



COMPREHENSIVE



110 Undergraduate majors
(7 academic colleges)
84 Masters programs
6 PhD programs
EE Program (Fall '07)
MSE Ph.D. Program (Fall '10)

- Total student enrollment (28,121)
- Undergraduate (24,038)
- Hispanic/ Latino (5,332) (22%)

[Fall 2007 Data]

- 1110 Faculty
- 93% teach on the undergraduate level.

■ Selected research areas

- Development of Flame-resistant Resins for Composites
- Nano Composites
- Modeling
- Polymer synthesis, Characterization and Processing
- Ablation testing
- Development of Fire-retardant Coatings

■ NanoPhase Materials Center

- ◆ Prof. Gary Beall, Director [gb11@txstate.edu]

■ Center for Coatings and Biobased Technology

- ◆ Dr. John Massingill, Director [john.massingill@txstate.edu]

Chair: Prof. Walter Rudzinski [wr01@txstate.edu]

■ CBDO

- ◆ Nano-based
- ◆ Improved strength
- ◆ Shatter-proof
- ◆ Memory



Protecting America's Heroes

Flying low-level combat missions has always been a dangerous undertaking. Texas State professors Chad Booth and Gary Beall are working to change that. With an initial donation of a patent from Shell Chemical Company, Booth and Beall have developed a new transparent ballistic polymer that is 30-50% stronger than current materials. This added level of protection is being fitted into the canopies of Cobra attack helicopters for use in Iraq. Thanks to the work of these two stellar scientists, more of our nation's heroes will be returning home.

TEXAS  STATE
UNIVERSITY
SAN MARCOS
The rising STAR of Texas

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- Selected research areas
 - ◆ Novel materials, processes, and devices for nanoelectronic and NEMS application
- Cleanroom/wafer processing
 - ◆ Expanding to 3,000 sq.ft. from 2,000
 - ◆ Primarily for research
- Heterofunctional Materials Center
 - ◆ Prof. Terry Golding, Director [golding@txstate.edu]
 - ◆ Focus on III-V, II-VI IR
- MultiBeam Epitaxial
 - ◆ Major equipment donation by Austin firm

Chair: Prof. David Donnelly [donnelly@txstate.edu]



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Technology

- Undergraduate Majors in Industrial Technology and Engineering Technology
 - ◆ Concentrations in Manufacturing Technology, Construction Management and Electronics
- Master of Science in Technology Metal Casting and Metallurgy
- Concentrations:
 - ◆ Sustainable Construction
 - ◆ Microwave Engineering
 - ◆ Concrete/Concrete Materials/Concrete Industry Management
 - ◆ Robotics

Technology is applied engineering

Technology applies and implements engineering solutions

Chair: Prof. Vedaraman Srirnam [vs04@txstate.edu]

Ingram School of Engineering

- Electrical Engineering
 - ◆ Micro and nano materials and Devices
 - ◆ Communication Systems and networking
- Industrial Engineering
- Manufacturing Engineering
 - ◆ General and Semiconductor Concentrations
- Materials and Crystal Growing
 - ◆ NANO-SAFETY facility under development

Engineering is applied science

Engineering applies science toward the solution of problems

Director: Prof. Harold Stern [hsstern@txstate.edu]

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R F Mitte Building

2008 Enhancements

- 5th Floor (EE) – completed on time and under budget
- Renovated Sr. Design Lab (RFM 1235)
- New Rapid Prototype Capabilities (Zprinter 450)
- New Human Factors Lab
- Renovating Robotics/CIM Lab (RFM 1239)
- Re-equipping Clean Room (RFM 1246)
- Replacing PCs in Classroom (RFM 1240)

And Much More

- **Computer Science**

- ◆ Chair: Prof. Hongchi Shi [hs15@txstate.edu]

- **Materials Science and Engineering**

- ◆ Director: Prof. Thomas Myers [tm1202@txstate.edu]
- ◆ Addressing the cross functional needs of nanotechnology and its commercialization

- **McCoy School of Business**

- ◆ Engineering/Technology-Business effort
 - ★ Prof. Cecilia Temponi [ctemponi@txstate.edu]
- ◆ Entrepreneurship Program
 - ★ Prof. Robert Hill [rh40@txstate.edu]

NANOMATERIALS APPLICATION CENTER

MISSION: The NANOMATERIALS APPLICATION CENTER at Texas State University-San Marcos coordinates, facilitates, disseminates information, and expedites nanoscience and nanoengineering developments to expedite the commercialization of innovation.

GOAL: Accelerate the development of high technology and the dissemination of these developments in order to expedite commercialization.

2008 Activities as of July

- Successful support of two ETF applications
- Companies located on campus
 - ◆ Xitronix, Inc.¹
 - ◆ nanoTox, Inc.¹
 - ◆ Nanotailor, Inc.
 - ◆ Noise, Inc.
- Five companies in serious discussions
- Three inventors presenting to researchers

¹Graduated in 2008

NANO-SAFETY

The NANOMATERIALS APPLICATION CENTER is addressing four key areas for developing a NANO-SAFETY collaborative effort that **1)** identifies the nanomaterial properties; **2)** the effect on humans and the environment; **3)** the means of handling the materials correctly; and, **4)** the procedures that must be in place to minimize risk in applications. Discussions have been initiated with numerous organizations in order to address this critical issue.

NAC Members and Affiliates



A scenic view of a river with large, ancient trees and their reflections in the water. The trees have thick, gnarled trunks and dense green foliage. The water is calm, reflecting the trees and the sky. The scene is peaceful and natural.

COME WORK WITH US

San Marcos, Texas

A Texas Natural

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Director

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<http://www.nanotxstate.org>

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