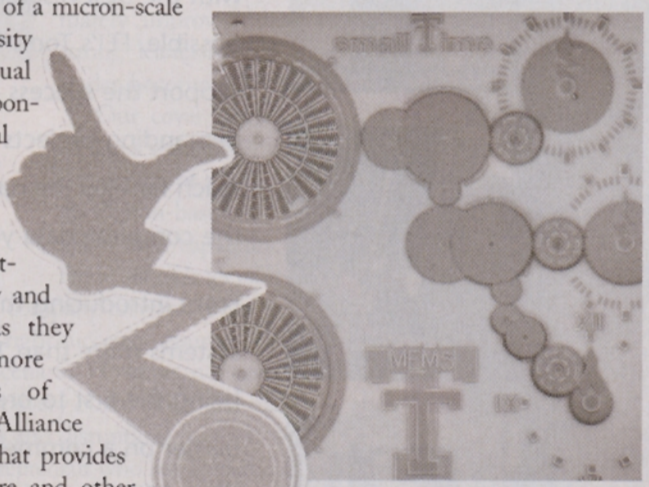
Nothing's secondhand in this MEMS design

Texas Tech's engineering students chalked up a big-time victory this summer with the tiniest of timepieces. Team leader Phillip Beverly's design of a micron-scale clock helped the university win the 2005 annual MEMS competition sponsored by Sandia National Laboratories, a leader in microsystems innovation.

The clock was a fitting choice for Beverly and his nine classmates as they competed against more experienced members of Sandia's University Alliance program, an initiative that provides course material, software and other support for universities offering MEMS instruction. The program exposes students to Sandia's SUMMiT process, which allows multilayer micromachining design and fabrication. SUMMiT stands for Sandia Ultra-planar, Multi-level MEMS Technology.

"We felt like we got in the game pretty late," said Tim Dallas, an associate professor in the electrical engineering department and a MEMS researcher. Dallas joined the alliance in the fall of 2004. It wasn't until the second semester of the academic year that his students started design work, which meant they were racing against the you-know-what to meet the April 1 deadline.



Images courtesy of Texas Tech University

Texas Tech student Phillip Beverly didn't let the enormity of entering a national MEMS design contest keep him from having fun. His micro clock pays homage to Small Times and his university, and has several ornate touches.

"Really, we were hoping to make the top eight," Dallas confessed.

In the end, the clock met all the requirements of the competition, and included some flourishes to boot. Judges looked for proof that the design integrated multiple layers and that the layers were flat, strengths of the SUMMiT process.

But Beverly didn't stop at just the basics. He added a Texas Tech logo, a gloved clock hand and a "small time" etching that mimicked the banner that appeared at the top of Small Times' magazine until a redesign this year. "Small time" referred to the clock itself, as well.

The clock was one of four designs submitted by Texas Tech students. Others included a chain, an atomic force microscope and a mirror, all at the micron scale. Sandia fabricated the designs for contestants for free, which means Dallas' future classes will have actual devices they can test. As Dallas pointed out, "We still don't know if it works."

– Candace Stuart

From lab to fab: Science goes to Hollywood

The setting: a university. Protagonists: scientists and engineers. Antagonists: administrators.

Plot 1: Researcher learns sound bites win over sound science after going head-to-head on television with a company that pairs his reputation with its product. Plot 2: Miscreants try to use a nano-based drug delivery system to murder people. Plot 3: A dog embedded with RFID tags becomes a courier of secret information.

Which works best as a pilot for a TV show? After attending a workshop for scientists with a hankering for Hollywood, would-be scriptwriter Diandra Leslie-Pelecky said she'd have to go with Plot 2 for the series she envisions.

"Everything you do in TV is life and death," she said, making the murder theme a natural debut show if she succeeds in landing a contract. "If you get science in there and get it right, it's a bonus."

Leslie-Pelecky, a physicist at the University of Nebraska in Lincoln who specializes in magnetic nanoparticles, was among 15 scientists or science-related professionals who attended a five-day workshop at the American Film Institute in California this summer. The workshop, funded through the Department of Defense, is designed to get more positive portrayals of scientists on TV and in movies.

"I believe, generally speaking, that film and TV teach both good and bad and

Photo courtesy of the American Film Institute

Physicist Diandra Leslie-Pelecky says she learned how to cater to Hollywood's needs at scriptwriting workshops. From left, she is flanked by Jeffrey Matsuura, a lawyer who specializes in nanotechnology, and fellow scientists Leo Cheng and G. Jeffrey Hoch.