Staff photo by Andrew D. Brosig

SFA physics professor Walter Trikosko demonstrates the power of a common child's balloon when it's filled with hydrogen gas and ignited by a candle during a demonstration for physics instructors and students in Kennedy Auditorium on campus.

Physics

SFA professors provide demos at regional conference

By MARIE LEONARD
Sentinel Staff

Friday morning, demonstrations showcasing mechanics, wave motion and magnetism were presented at a regional meeting of physics teachers and students on Stephen F. Austin State University's campus.

Members of the Texas Section of the American Physical Society, the Texas Section of the American Association of Physics Teachers and the Society of Physics Students gathered for a joint two-day showcase at SFA, where members heard various reports, saw demonstrations and toured the SFA Planetarium or observatory.

Dr. Harry Swinney, professor at the University of Texas at Austin,

Please see PHYSICS, Page 6A

The Daily Sentinel Saturday, March 5, 2011

Physics

Continued from Page 1A

completed a demonstration of the fluid and solid phases of sand during the mechanics portion of the showcase.

Swinney's demonstration included sand, a bottle and a chain.

"If you take water and cool it down to 32 degrees, the liquid phase of water becomes a solid," he said. "We see that sand behaves like a fluid under some conditions, but there is a transition that's well defined from the solid phase to the fluid phase."

For example, if pharmaceutical ingredients like an inert ingredient and an active ingredient are mixed together with lumps, there will be an incorrect dosage of the medicine, Swinney said. He demonstrated how sand can act like both a solid and a liquid by placing a chain into a bottle and then poured sand into the bottle filling it with sand.

"The sand pours like a fluid and it fills the bottle," Swinney said.

He compacted the sand into the bottle by banging it on the table, making it act more like a solid that held the chain in place, and then swung bottle by the chain around in circles and the chain remained in the sand.

"With a fraction of the total volume occupied by the sand, there is a specific value needed to make the transition from liquid to solid," Swinney said. "When the sand occupies 59 percent or more of the volume, you have a solid. If you have less than 59 percent, it's a fluid."

Walter Trikosko, SFA professor of physics, demonstrated the speed at which objects will fall when in a vacuum.

"I have a container with a feather and a billiard ball, and if I release them, the feather takes a considerable amount of time to fall," Trikosko said.

When he sucked the air out from the container, both objects fell at the same time. Trikosko gathered a few students from the audience for his next demonstration about longitudinal and transverse waves. He told the students to stand shoulder-to-shoulder, and proceeded to push the first student, which created a wave. In order to create a transverse wave, Trikosko told the students to hold hands, and he pushed the first student up, which created a wave.

"As physicists, we study waves in one form or another," Trikosko said. "I know it's lame, but they get a kick out of it."

Marie Leonard can be reached at mleonard@dailysentinel.com.