

# outbursts

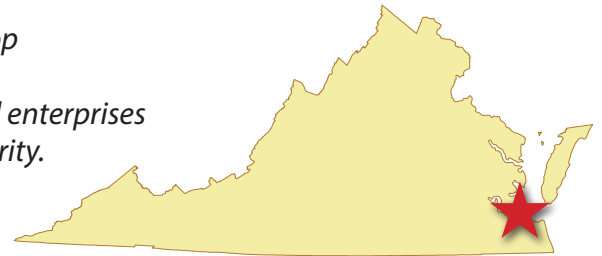
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## Newport News event brings tech projects to the attention of industry

*A May event in Newport News introduced some of Virginia Tech's top researchers to the private sector in Virginia's Hampton Roads area. The region hosts business clusters such as aerospace, maritime and enterprises that contract with the Department of Defense and Homeland Security. Here's a look at five top researchers who wowed the crowd with their enthusiasm.*



By Andrea Brunais

### DEMOCRATIZING COMPUTING

Parallel computing has opened up new worlds. It allows scientists to attack problems in a fraction of the time that traditional methods require. Any project



that needs massive amounts of data-processing capabilities falls into this turf.

Virginia Tech President Timothy D. Sands calls parallel computing "a new frontier for science,"

one that enables researchers to "tackle problems that would have been impossible in the past."

The College of Engineering's Wu Feng is the star of a Microsoft commercial that touts parallel computing's part in assisting cancer researchers.

"When colleagues come to me, they're looking to be empowered by computing rather than be at the mercy of computing," Feng says.

Learn more about the research in this news video: <http://tinyurl.com/VT-WuFeng>



Melissa Lubin, director of the Virginia Tech Hampton Roads Center, Newport News (and the Virginia Beach center), and President Timothy D. Sands speak with Daily Press reporter Dave Ress.

### PRINTING PIZZA

In an exchange on the online discussion forum Reddit, Timothy Long was asked about 3-D printers producing food. His reply was startling: Why settle for printing out a slice of pizza? Instead, he declared, "The real future may be in printing the entire pizzeria building."

Long, a professor in the College of Science and one of three Virginia Outstanding Scientists for 2015, was encouraging people to think big.

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He asks a series of questions: "How do we print a building that's energy efficient? How do you print a building that transports



water or controls sound or is smart in some way? As we look at those kinds of bold visions, we're going to need materials that don't currently exist. We cannot use the materials of 1950. We have to use the materials of 2050."

Virginia Tech is coming up with those new materials by adopting a holistic approach, he says. His field is chemistry, but his boundaries encompass engineering and other fields.

Learn more about the research in this news video: <http://tinyurl.com/VT-Long>

### ROBOTIC BOATS

A new generation of underwater robots is needed for inspection, search and rescue.

"We spend a lot of time looking for things underwater, and those range from airplane parts, sadly, to military things like mines," says Dan Stilwell.

At the Newport News showcase, the engineering professor was representing the Virginia Center for Autonomous Systems.



His specialty is maritime robotics, and he is devoted to helping students create better underwater robots. The challenges are many.

"How do we make robots smart?" he asks. The goal is to come up with undersea robots that "can make their own decisions and operate productively both with humans but also completely without human intervention."

Learn more about the research in this news video: <http://tinyurl.com/VT-Stilwell>

### PUSHING 3-D TECHNOLOGY

What engineering student worth his or her salt wouldn't want to print things out? Salt may be a stretch, but foundry sand is one of the materials employed in 3-D printing at Virginia Tech. So are metals, ceramics, polymers and more, says Christopher Williams.

"What really sets Virginia Tech apart in the area of additive manufacturing – more commonly referred to as 3-D printing – is that we have a wide array of technologies that really allow us to print any type of



The DreamVendor 2 in Christopher Williams' lab is an interactive 3-D printing station that enables students to quickly fabricate prototypes for their academic, and even personal, design projects.



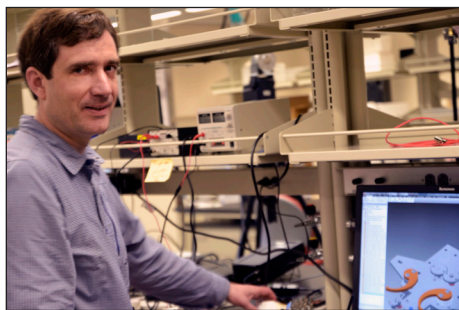
material," he says. "Really what we do is try to push those technologies even further. We develop new materials, new processes, and new design applications."

President Sands predicts that 3-D printing will make for a fascinating future: "I think that will unleash a lot of dormant creativity in our society."

Learn more about the research in this news video: <http://tinyurl.com/VT-Pushing3D>

### BAT-INSPIRED SONAR

Rolf Mueller's job is fascinating. Sometimes he's in the lab. Other times he stands outside bat caves in China as the creatures



Rolf Mueller has developed a prototype of a dynamic sonar system inspired by bats.

make the mass exodus they are known for.

"I've never seen two bats crash into each other," he says. "They come very close, but they never crash."

Mueller and his graduate students in the College of Engineering are trying to discover why. Their project is of interest to the Navy's Naval Sea Systems Command in Newport, Rhode Island, because results could lead to better sonar.

Sonar does a great job in the open ocean, but in shallow-water environments, rocks and narrow depths throw things off. Bats, on the other hand, are undeterred. Some species navigate in dense thickets, which they fly through at breakneck speeds without touching anything, all the while catching prey on the wing.

"Bats show us that these problems can be solved," Mueller says.

Learn more about the research in this news video: <http://tinyurl.com/VT-BatSonar>

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