

TECH TITANS  
WINNER

TECHNOLOGY  
INNOVATOR



## H. Bruce Li

President and CTO  
21-CENTURY SILICON INC.

H. Bruce Li was raised to be an engineer. But he credits particularly good math and physics teachers for pointing him toward what became his true calling: commercializing research and technology.

Li came to Dallas after earning a doctorate in physics from Oklahoma State University in Stillwater, Okla., and holds an undergraduate degree in chemical engineering from the National Taiwan University. He has enjoyed a long career in the tech world, including 16 years in the Central Research Laboratory of semiconductor giant Texas Instruments Inc.

But Li says he's most proud of his current efforts at Richardson-based 21-Century Silicon Inc., a solar materials manufacturer he co-founded in 2005.

The company is built on Li's development of a potentially industry-changing manufacturing technology and process for creating solar-grade silicon, used in solar systems found on rooftops across the country. Two U.S. patents are pending on the technology.

The technology creates silicon at half the cost of conventional methods through an environmentally friendly method. As a supplier of high-grade polysilicon for the photovoltaic indus-

try, the young company is a player in the growing renewable energy industry.

Li's efforts have earned him the Technology Innovator award.

"It's a very exciting time," both for the company and myself, Li said.

Through Li's innovation and hands-on leadership, 21-Century Silicon has greatly improved on traditional manufacturing technology known for being both inefficient and expensive, said John Jacobs, senior vice president of the Metroplex Technology Business Council.

The company's growth was supercharged by a \$3.5 million investment from the Texas Emerging Technology Fund in 2009. Since that time, the company's work force has doubled to 15, with continued growth expected.

The company has secured more than \$400 million in customer supply orders and memorandums of understanding and much of its five-year capacity is already under contract.

— Lisa Tanner

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## Austin Crowder

Founder and CEO | ALPHA MED-SURGE INC.

When Austin Crowder founded Alpha Med-Surge Inc. in 2005, he sought to expand the vision of surgeons in the operating room.

Alpha Med-Surge, which does business as L.I.T. Surgical, is developing a head-mounted white light that more clearly defines internal structures in surgery.

The result is created by combining the output of 12 point sources of the light. The light is as bright as Xenon but can adapt to different parts of the anatomy.

Current lights might not be bright enough, generate too much heat or require cables that discourage mobility.

"We developed a platform that plumbs

solid-state light that's brighter than ever achieved," Crowder said.

Future versions of the headlamp will allow the doctor to change the light's parameters — frequency and color — depending on the area of the anatomical operation.

In addition to its light quality, the technology weighs less than nine ounces, stays on for more than four hours and can be powered with lithium ion batteries.

Although medicine is the headlamp's primary application, the product can also be used for other industries such as gemology and aerospace, Crowder said.

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## Harold 'Skip' Garner

Professional of Biochemistry and Internal Medicine  
UT SOUTHWESTERN MEDICAL CENTER AT DALLAS

Year after year, Harold "Skip" Garner continually impacts the community as an innovator.

His most recent project, Xanapath LLC, launched in April 2009. Garner, who has been working on the project for 10 years, partnered with College Station-based Lynntech to create the cancer diagnostic technology that uses a hyperspectral imaging microscope, developed in Garner's lab, to measure several cancer markers at once.

Currently, Xanapath is taking cell samples from companies and universities and provides profiles of the cancer's state. Xanapath's first offering, Garner said, is for breast cancer cells, which are shed by the tumor in its early stages. Only five to

10 cells can be collected from a blood sample, and previous technology could only discern three genetic markers from each cell.

"When you only have a few cells, it's critical to get the most measurements you can," Garner said.

Xanapath's technology is able to gather 10 measurements per cell. This information can help determine how to best treat the cancer. In addition to breast cancer profiling, Garner is planning to add colon, prostate, lung and ovarian cancer analysis options.

The technology has already won several small business innovative grants.

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## Frank Lu

Professor of Mechanical and Aerospace Engineering, Director of the Aerodynamics  
Research Center | THE UNIVERSITY OF TEXAS AT ARLINGTON

Frank Lu's detonation engines might power a small city someday. The University of Texas at Arlington mechanical and aerospace engineering professor and his colleagues have spent decades perfecting the engines.

One future application for the engine is as a power station. Current power stations use many steps to convert other forms of energy into electrical energy. Steam turbine plants must burn coal to heat water, generate steam and filter it through a turbine. Detonation engines, Lu said, will eliminate many of these intermediate processes.

The engines will also use both conventional and alternative fuels, have fewer moving parts, cost less to maintain and are much more energy efficient than the current technology.

"They can produce more work with less heat," Lu said. "We want to get as much bang for our buck, so to speak."

The engines, which will eventually be scalable but are currently about the size of a desk, are inexpensive and are good candidates as energy providers for rural and economically disadvantaged regions of the world, he said.

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