EVER TRUE
150 YEARS
THE CAMPAIGN FOR PURDUE UNIVERSITY

COLLEGE OF ENGINEERING: PREEMINENT TEAMS

Building "preeminent teams" is a research-centric approach to faculty hiring that asks: What would it take to catapult your high-impact research area to international preeminence? These ambitious teams, which build on the College of Engineering's existing strengths, are part of our strategic growth plan to add as many as 107 faculty over five years. The 2013 inaugural competition yielded four teams from 32 contenders in a process akin to entrepreneurs pitching to venture capitalists. In 2014, four more teams were selected, and in 2015, the team total rose to 11. Each team receives an investment of faculty lines, resources, and space.

2015 TEAMS

- *Label-free Imaging: Emerging Platform for Biology and Medicine* – Advances in imaging technology could provide faster and more accurate diagnoses of conditions including cardiovascular disease and cancer.
- *Advanced Composites Manufacturing* – Holds promise to bring innovations such as lighter, more powerful, and fuel-efficient jet engines through advanced molecular-scale modeling and studies of polymers, composites, and carbon nanomaterials.
- *Engineering Healthier Brains: Assessment, Treatment, and Prevention of Neurophysiologic Injury and Disease* – Generate new clinical strategies for earlier patient diagnosis, characterization, and treatment of brain injuries. Develop protective technologies that include improved materials for football helmets.

2014 TEAMS

- *Designer Particulate Products* – Research that could affect applications in areas including drug delivery and agriculture. Particle products contribute more than $1 trillion to the U.S. economy.
- *Cold Plasmas* – New ways of generating and controlling plasmas that could lead to applications ranging from medicine and food safety to reconfigurable mobile electronics to enhancing aerodynamics and propulsion performance of airplanes.
- *Nanomanufacturing* – Research to create "aware-responsive" films with applications in pharmacy, agriculture, food packaging, and functional non-woven materials for uses including wound dressings and diapers.
- *Spintronics* – Using the "spin state" of electrons as a possible basis for the next generation transistor in this new field emerging from the confluence of spintronics and nanomagnetics.

2013 TEAMS

- *Implantable Networks for Medical Treatment* – Wireless implantable devices for applications including suppressing epileptic seizures, prosthesis control, modulation of cardiac arrhythmias, treatment of depression, and therapeutic intervention for glaucoma.
- *Energetic Materials* – New methods to study energetic materials, including explosives, propellants, and pyrotechnics for applications including national defense and security at airports, sports arenas, and schools.
- *Flexible and Efficient Spectrum Usage* – Amid ever-growing demand for mobile communication, techniques to use the radio spectrum that will ensure that radios for the military and disaster relief operate with minimal disruption and loss of life.
- *Quantum Photonics* – Exploring the use of single photons — the tiny particles that make up light — for future quantum information systems far more powerful than today's computers.

HOW YOU CAN HELP

Through *Ever True: The Campaign for Purdue University,* you can help our preeminent teams to make world-changing impact. Be a part of shaping our research future. ■