



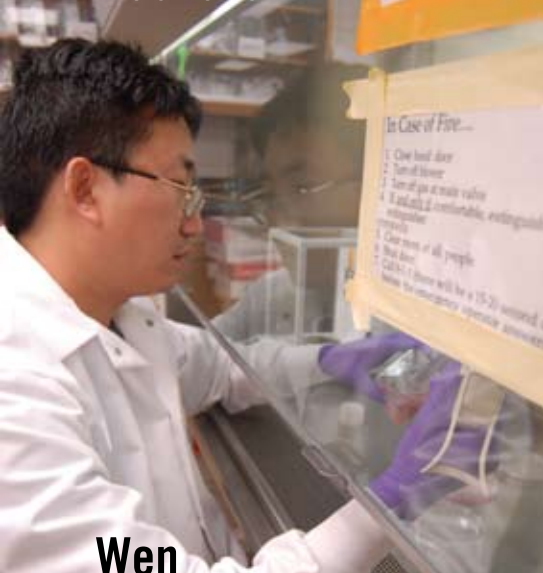
Madhavan



Ke



Hallstrom



Wen



Huang

2008 NSF CAREER Award Winners

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Clemson University's College of Engineering and Science is proud to announce its NSF CAREER Award winners for 2008.

Krishna P.C. Madhavan
Engineering & Science Education

Dr. Madhavan's research concentrates on advancing the fundamental knowledge associated with tailoring cyber tools and cyber environments so they are learner-centric and adaptive. Dr. Madhavan's work is informed by an innovative framework that combines learning theories with techniques from the domain of cyber infrastructure. The ultimate goal of his research is to understand how today's engineering students learn so cyber tools may be created to match the levels of information richness and sophistication that students are accustomed to encountering in their daily cyber-social interactions.

Pu-Chun Ke
Physics & Astronomy

How do lab-created nanomaterials that are available on the consumer market impact human health and the environment? That is one of the questions Dr. Ke hopes to answer as he deciphers the behaviors of nanomaterials in living systems. Recognized internationally for his work, Dr. Ke has discovered that certain mammalian colon cancer cells contract when cell membranes interact with nanoparticles. This research provided a firsthand look at how nanomaterials can trigger toxicity when interacting with cell membranes. Dr. Ke is applying the results from his biophysical studies to practical applications, such as toxicity and gene and drug delivery.

Jason O. Hallstrom
School of Computing

Dr. Hallstrom leads an effort to enable the next generation of embedded network systems. The corner stone of an emerging planetary-monitoring fabric, these networks observe fragile environments, safeguard critical infrastructure and protect local communities. Dr. Hallstrom's team works along two tracks. On the first, they adapt software engineering techniques to better address the unique challenges of this new domain. On the second, they develop rigorous specification and reasoning foundations to ensure system correctness and performance.

Xuejun Wen
Bioengineering

Improving stem cell viability is the focus of Dr. Wen's research. The specialty of his lab is inducing human stem cells into different types of cells aimed at curing diseases and injuries such as Parkinson's and Alzheimer's diseases, diabetes, heart and brain strokes, and spinal cord injuries. One of the greatest challenges in this type of work is poor cell survival once the cells are put into place. Dr. Wen's unique strategy entails manipulating the brain's microenvironment before and after the stem cell transplantation to create a niche suitable for the long-term survival and function of the transplanted cells.

Yong Huang
Mechanical Engineering

Dr. Huang's work focuses on creating a damage-free living cell and protein printing process for numerous applications, including organ printing. The safe and efficient implementation of cell printing from his research may enable its wide application to both organ printing and rapid prototyping of cell-based products, which may ultimately assist in the production of human organ manufacturing for transplant patients. A scholar paper on how the modeling of cell droplet and hydrogel coatings impact cell printing was among those selected for the 2007 North American Research Institution of the Society of Manufacturing Engineers Outstanding Paper Awards.

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