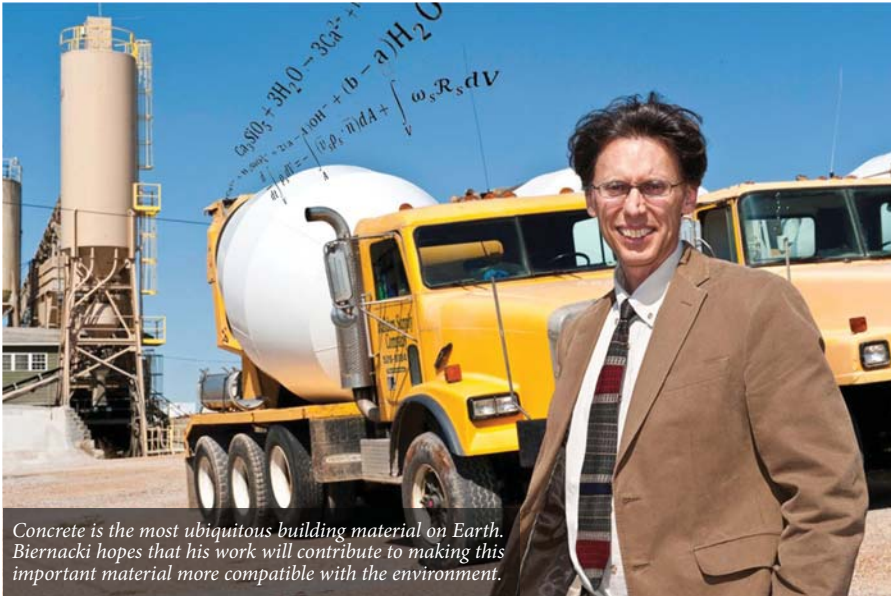


TTU'S

Biernacki Receives University Distinguished Faculty Fellow Award



Concrete is the most ubiquitous building material on Earth. Biernacki hopes that his work will contribute to making this important material more compatible with the environment.

COOKEVILLE, Tenn. (Sept. 20, 2011) – After fifteen years of designing innovative technologies for a leading petrochemical company, Dr. Joseph Biernacki wanted to become an academician: research, teaching, services and the opportunity to work with students were so attractive to him that he left a successful career in industry to join the faculty at TTU. In the 14 or so years since, he has been elected as Fellow of both the American Ceramic Society (ACerS) and the American Concrete Institute (ACI) and was honored by his ACerS colleagues and profiled among five leading scholars in his field for his research and service.

Biernacki's students see him as a passionate mentor and a tireless teacher, his colleagues seek his advice and experience in professional matters and he has helped to establish unique facilities and teaching methodologies that have moved both research and educational endeavors towards greater excellence on a campus-wide basis.

In recognition of these achievements and his promising career trajectory, the Chemical Engineering Professor was awarded the 2011 University Distinguished Faculty Fellow award (DFF). "There is no better example of what this award should be than Dr. Biernacki," said Pedro E. Arce, Chairperson of TTU's Chemical Engineering Department and last year's DFF

award recipient. "He is a person who is not only a leader in his field but he is open to sharing what he knows with anyone who wants to learn – a passionate facilitator of learning with an unsurpassed service commitment to TTU's mission for students' success."

In addition to teaching, Biernacki spends a great deal of time with his research, trying to understand ways to improve portland cement concrete. Biernacki says that, "although concrete is an age old material, dating back to at least

Roman times, the chemical processes that transform the fluid concrete into hardened structures is not well understood even today." It is these chemical reactions, called hydration, that Biernacki focuses on and hopes will transform the way we engineer more durable and environmentally friendly concrete for the construction of 21st Century infrastructure. "Today, the production of concrete is responsible for about 7 percent of the world's carbon dioxide emissions... if we could make concrete last 50 or even 25 percent longer, we would have a huge impact on the effect that concrete has on our environment," he explains.

The American Concrete Institute recently invited Dr. Biernacki to present on his vision for research on cement. Professor Kenneth C. Hoover, ACI President, Weiss Presidential Fellow and Professor of Civil and Environmental Engineering at Cornell University states, "I found his ideas exciting, his research plan sound, and the payoff highly valuable and realistic."

Biernacki will address a national audience once again this October in Cincinnati where he will be pitching his research agenda and trying to gain broad industry support for what he calls a plan for "paving the way to a more sustainable concrete infrastructure."

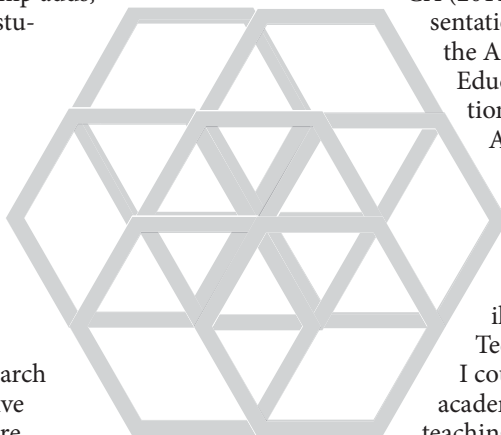
$$\frac{d}{dt} \int_V \rho_s dV = - \int_A (\vec{v}_s \rho_s \cdot \vec{n}) dA + \int_V \omega_s \mathcal{R}_s dV$$

Biernacki Receives University Distinguished Faculty Fellow Award

Dr. Biernacki's powerful and engaging mentoring style with students is highly appreciated. Dr. John Richardson, who was TTU's first National Science Foundation (NSF) Graduate Research Fellowship recipient and Biernacki's graduate student, remembers his time working with him: "During my time at TTU, I know of no other faculty that enjoyed the level of respect, trust, and harmony with his or her students than Biernacki did". Jessica Murrillo, a current Environmental Sciences Doctoral Student under Dr. Biernacki's mentorship adds, "[he] has a keen ability to get students excited about... research and learning."

Biernacki views service as a third component of the academic experience, one which completes a continuum that connects students' learning and research. He explains that, "service helps me to disseminate the research that I do and the research that I do helps me to be effective in the classroom." "Students are always looking for interesting and innovative things to do in the classroom. It would be difficult to maintain a vital and current approach to engineering education without my research." His exemplary contributions to TTU's educational, research and service missions have earned him the 2003 University Outstanding Service Award, the 2008 University Outstanding Teaching Award and the 2009 Caplenor Award for research excellence.

Dr. Ken Currie, Director of the TTU Center for Manufacturing Research (CMR) mentions that "Biernacki's highly competitive National Science Foundation proposals have been a crucial element for bringing state-of-the-art research infrastructure not only to the center but also to the TTU researcher and industrial community at large." Biernacki has been very effective at teaming up with colleagues in National Centers and Laboratories such as the National Institute of Standards and Technology (NIST), Oakridge National Laboratory (ORNL), the University of Michigan and others, thereby elevating TTU's prestige in scholarly research to a national level. "It is contagious to see Joe's powerful driving force for excellence and his fabulous commitment to TTU's vision to become a leader for engineering and technology education," Arce said.



Biernack's passion to bring the most innovative pedagogical approaches to classroom is legendary among his Chemical Engineering colleagues and staff. Mrs. Asher, the coordinator of the new computational platform, MoLE-SI, observes, "It is highly motivating to see Dr. Biernacki's enthusiasm and positive view to bring new and exciting computer-based learning to the students being the most senior ChE faculty." His team-based learning approaches took him to the ASEE National meeting, Vancouver, CA (2011) to present two invited presentations; in 2006 Biernacki received the American Society of Engineering Education (ASEE) South East Section prestigious Thomas C. Evans Award and the ASEE Corcoran Award for his work on engineering education assessment.

Biernacki has been at TTU for 14 years. He came to Cookeville, he said, because he felt that Tech could be a "vessel in which I could actively pursue a balanced academic experience including teaching, research and service." That combination, according to Arce, made him the top contender for this year's DFF award, which recognizes faculty members who have made significant contributions toward providing external recognition to the university in all three areas.

"I found his ideas exciting, his research plan sound, and the payoff highly valuable and realistic".

~ Professor Kenneth C. Hoover, American Concrete Institute President

Biernacki has a chemical engineering degree from Case Western Reserve University (CWRU) and a Master's and Doctorate from Cleveland State University (CSU). Before joining TTU, he spent 15 years as a research and development engineer for British Petroleum (BP).

$$\frac{d}{dt} \int_V \rho_s dV = - \int_A (\vec{v}_s \rho_s \cdot \vec{n}) dA + \int_V \omega_s \mathcal{R}_s dV$$