Sustainability in Beauty: An Extension of Adhesion and Cohesion Studies
Dr. Ting Tan, University of Vermont

The adhesion between asphalt binders and aggregates is essential to the performance of asphalt mixtures. We used the modified Atomic Force Microscopy probes to study the adhesion between different asphalt binders and the aggregate minerals, including silica, alumina and calcium carbonate particles. Adhesion measurements by the particle-modified AFM probes differentiated the performance of different asphalt binders. Results also suggested that alumina-binder pairs exhibit highest adhesion, while the calcium carbonate and the silica binder pairs exhibit relatively low adhesion.

Bamboo is a functionally graded fiber-reinforced composite in nature. We started with a review of bamboo microstructural features and mechanical properties. The study of bamboo inspired materials were then discussed based on different applications. At last, a hybrid energy harvesting system using a bamboo wind turbine and solar panels is introduced as an extension of bamboo inspired studies.

Finally, I will outline some of my previous work, including the restoration of a 15th century marble statue in the Metropolitan Museum of Art in New York.

Biography

Dr. Ting Tan is an assistant professor at the University of Vermont. He was a post-doctoral research associate in the U.S. Department of Energy Oak Ridge National Laboratory between 2011 and 2012. He obtained his PhD in Civil and Environmental Engineering at Princeton University in 2011, and his MS and BS in Civil Engineering and Mechanics from Huazhong University of Science and Technology in 2006 and 2003, respectively. Dr. Tan is now a sustainability faculty fellow at UVM. His study focuses on the mechanics of materials within the context of energy and sustainability.

Pizza will be served.