

Latest Research
by Dr. Michael
Wolcott, first
recipient of the
Anjan Bose
Outstanding
Researcher Award



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The Evolution and Future of Renewable Composite Materials

Since the 1960's, composite materials produced from wood and other natural fibers have played a large role in the transition of building construction and materials usage world-wide. Originally, these materials were conceived in a response to improving resource utilization and avoiding polluting forms of disposal for mill residues. However, the evolution and increased appetite for building materials in North America soon placed increased demands on these materials. Both academia and industry responded to this demand by producing new materials systems with improved functionality. Recently, improved durability of these materials has been a primary focus in the development of new extrudable forms of composites that are naturally durable and easily processed with complicated structural forms. Throughout the last half-century, WSU researchers have played an integral role in both developing the science and transitioning the technologies. Now we are challenged with envisioning the role these renewable materials and their complex production facilities will play in tomorrow's biorefineries. Biorefineries are the facilities by which our societies will likely process biomass to produce a host of different physical and chemical products to satisfy the world's growing demands for raw material. Chief among the many products will be fuels, commodity chemicals, polymers, and nano-scaled reinforcement. Given our increasingly tenuous dependence on foreign oil, the importance of transitioning this image to reality has never been more poignant than today.

Dr. Wolcott, on the WSU faculty since 1996, is an international leader in the area of wood-based composite research, where his work has led to the development of advanced materials to better withstand aging processes, reduce manufacturing costs and pollution, and provide better performance. He has received more than \$17 million in funding from numerous federal agencies, including the Office of Naval Research, the Department of Energy, the USDA, and the Federal Highway Administration. He holds three patents: for a low-density cellular wood plastic composite and its formation process, for a portable bridge system, and for a method of forming paper and board products from a reed plant. Wolcott has been actively engaged with industry to commercialize his research and has participated in projects for more than 45 companies. He has also received numerous national awards for research excellence, including the prestigious Society of Wood Science and Technology's George Marra Award (in 1991 and 1995), and he has been an invited keynote lecturer at renowned international conferences. He has 43 refereed publications in print or accepted in national and international journals and books, and his work is highly cited.