NC State’s Nonwovens Institute Researches ‘Durable’ Nonwovens

While nonwovens are currently viewed by many as only low-cost disposable materials, we believe in the near future nonwovens will be competitive in longer life products for graphics and banners, outdoor structures, performance apparel, and military applications. We believe nonwovens will both compete and be used in combination with woven and knits to make the new composites high performance, multifunctional materials.

This statement by Genevieve Garland, director of marketing & business development for the Nonwovens Institute (NWI), describes the potential and future markets for nonwovens developments.

The NWI, established in 2007, is the source of many of these new developments. And it is fitting that the NWI is located in the state of North Carolina, which is home to more nonwoven textile plants than any other state, and more nonwoven facilities than anywhere else in the world.

The NWI story began in 1991 when the Nonwovens Cooperative Research Center (NRCRC), a state/university/university cooperative, was founded. The NRCRC began with six members and has grown to be the largest state/university/university-based Cooperative Research Center in North America. NWI was formed to further enhance the NRCRC’s research mission. According to Garland, the NWI’s research team is currently focusing a significant portion of its internal development programs in the area of “durable” nonwovens.

She explains, “When we say ‘durable,’ we mean not single-use as most nonwovens are currently. Durable nonwovens can be products that are used multiple times, and extend to products that are indiscernible. We are using the word durable since it represents a natural growth opportunity for the future, as opposed to what nonwovens have been in the past.”

Current research in the area of durable nonwovens shows that these fabrics are lightweight, absorbent, washable, soft and low-cost. In addition, the fabrics can provide repellency to liquids and resistance to soil, bacteria, flames, abrasion, degradation, and mold.

NWI’s research mission has expanded beyond graduate research into product development activities in the form of sponsored, private research projects, and the use of state-of-the-art pilot and testing facilities. NWI also provides professional education through its yearly professional education and customized programs.

The Institute’s NRC research portfolio focuses on three primary areas: Material Development, Modelling-Structure-Property Relationships, and Fiber Modification and Function. The research proposals are developed by the Institute’s faculty, in collaboration with NRCRC member companies, and are based on the needs of the nonwoven industry. NRCRC’s Industrial Advisory Board, which monitors the operational aspects of the Center, prioritizes the proposals and makes recommendations for funding.

Garland states, “Although the research projects being done at NWI are proprietary and only shared with the NRCRC membership, a few of the current titles include Electronic Sponbound Nonwovens, Surface Engineering of Nonwoven Materials Using Atomic Layer Deposition, High Throughput Melt Electrospinning of Nanofibers, Fabrication and Modeling of Conductive Nonwovens, Hybrid Composite Liquid Filters, and Polymer Based Drug Delivery Systems.”

Going forward, it is the goal of NWI to increase NRCRC’s membership by continuing to address the immediate needs of the nonwovens and affiliated industries. NWI recently developed a scientific advisory board to direct a portion of NRCRC’s research programs on strategic longer term programs in the areas where fiber based systems can have an impact in sustainability, energy, health and well-being, and military applications.

Garland notes, “A key advantage that nonwovens offer over more traditional fabric processing is a shorter product development cycle, and the potential for lower-cost, multifunctional materials with equal or better performance.”

For more information on The Nonwovens Institute (NWI) and members in the Nonwovens Cooperative Research Center (NRCRC), contact Genevieve Garland, 919-513-4777, genevieve Garland@ncsu.edu. Kathlyn Swantko, president of the FabricLink Network, created TheTechnicalCenter.com for Industry networking and marketing of specialty textiles, and FabricLink.com for consumer education about everything fabric. kgswantko@fabriclink.com, 818-848-7501.