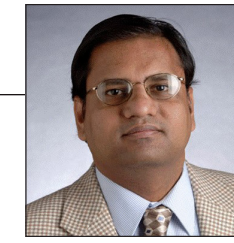
# Editorial



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***TAPPI JOURNAL***
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# Investing in Amercian advanced manufacturing

American manufacturing is seeing a renewal, which is needed to boost jobs in America, particularly in the middle and manufacturing base of the country. The ongoing tariff situation emphasizes the importance of protecting domestic manufacturing. There is U.S. congressional agreement, in principle, to bring back manufacturing to the United States. However, given how the global trade and manufacturing space has shifted in the last four decades, it may not be a comparative advantage to manufacture low margin and labor-intensive products. Officials in the current U.S. Administration have stated that manufacturing of socks and T-shirts is not necessarily in the interest of the United States, but focusing on value-added products is essential. While silicon chips, solar panels, and batteries are key items of interest, advanced textile materials such as those that find applications in industrial products and composites, products that can save human lives, and products for protecting the environment are highly-valued items that cater to national security.

## Support needed from all corners

While we revitalize manufacturing, investments in research and development (R&D) will move domestic manufacturing forward. To stay internationally competitive, immediate R&D investments are needed and are currently included in proposed U.S. legislation. Likewise, the industry and professional associations like the Technical Association of the Pulp and Paper Industry (TAPPI) and American Association of Textile Chemicals and Colorists (AATCC) should promote the need and the advantages of research.

Professional associations should engage in outreach to stakeholders by timely dissemination of new product developments, policy matters, safety regulations, and sustainability and functionality developments. Professional colleagues should also encourage more knowledge dissemination from practitioners in the industry and support active "industry-academia-professional association" engagement.

TAPPI, for example, is doing an excellent job of promoting research with its open access *TAPPI Journal* and other publications. This is important for encouraging young researchers like undergraduate students and high school seniors to get involved in research and publish peer-reviewed research in science, technology, engineering, and math (STEM) disciplines. The next phase of academic and industrial research should involve multiple disciplines, as science has become boundaryless and such scientific advancements are needed for developing life-changing products and manufacturing innovation.

Investments in manufacturing and R&D through federal support are needed for projects and products that save lives. Although this is not basic research, support for development of processes and products, which or may not yield immediate results, is the need of the hour. Industry must join hands with the federal government via such public-private partnerships.

## Case in point: Nonwovens

Nonwoven roll goods are the precursor materials that enjoy support from a domestic manufacturing perspective due to need, demand, and logistical advantages. Woven fabrics, knits, braids, and soft composites that cater to industrial and defense sectors will have growth and will boost domestic manufacturing and innovation.

Support for research and domestic manufacturing is needed from all corners, especially for products that can save and protect humans like advanced textile products, personal care tissues, defense textiles, and nonwovens for personal hygiene, medical care, and industrial applications.

The nonwovens sector has been a beneficiary of such joint ventures. As a case in point, in the 2000s, the U.S. Department of Defense funded projects to counter biological and chemical toxins. This multiyear support led to the invention of the FiberTect dry wipe, a three-layer nonwoven absorbent cloth for absorbing/adsorbing hazardous chemicals and toxic materials. The technology, after having

gone through systematic testing at the U.S. Department of Energy's Lawrence Livermore National Laboratory, became commercial due to the involvement of Fredericksburg, VA-based First Line Technology. The continued involvement of small business entities like First Line Technology has enabled us to realize multiple applications of academia-invented technology, such as fine particle decontamination, dry decontamination, and oil spill containment.

FiberTect also reflects a new concept that has emerged called "hybrid decontamination," which is taking toxic chemical decontamination to the next level. This model combines different decontamination methods, often including both dry and wet techniques, for effective removal or neutralization of contaminants. Hybrid decontamination highlights the importance of government support and the collective participation of stakeholders in academia, government-backed laboratories, industry, and federal support.

American manufacturing will be a leader in advanced, agile, and sustainable manufacturing with the support of government agencies, industry, and professional associations. The evolution of advanced manufacturing and development of high-performance materials is the next phase of material innovation. **TJ**


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