



**SESHADRI RAMKUMAR**  
Past Chair, TAPPI NET Division

## Research and development in the post COVID-19 era

**S**cience and technology occupy prominent roles in solving global problems. The ongoing COVID-19 pandemic has reinforced the importance of science regarding decision-making, saving lives, and safeguarding the environment. While information technology (IT) and IT-based tools have garnered much needed attention in the past few decades, other areas such as manufacturing engineering, biotechnology, and pharmaceuticals are finding their right places in gaining public and political support and attention — thanks to COVID-19! Such public attention has highlighted vulnerabilities due to lack of investments in manufacturing and materials engineering, as well as the need for strategic investments in these areas.

### COVID-19 exposes research gaps

Early in the pandemic, the United States faced shortages of nonwoven surgical masks, which have proven to be life savers. Developed economies were dependent on China for such manufactured goods. COVID-19 exposed our vulnerabilities in certain manufactured goods and the fact that any supply chain disruption can lead to serious consequences for public health and national security.

While investments in advanced manufacturing, new material technologies, and sustainable products are necessary, growth in public funding for science, engineering, and technology is the need of the hour. Taxpayer-supported basic research is the strong foundation for national security and economic growth. Our dependency on countries like Taiwan for semiconductors and the Far East and South Asia for certain manufactured goods emphasizes the need for advanced manufacturing in areas like electronics, advanced textiles, and more.

In addition to basic research, mission-linked research is needed, including research on countermeasure tech-

nologies to combat future catastrophes, energy security, defense, and sustainable infrastructure, to name a few. As with basic research, applied research needs public support that will help small and medium enterprises (SMEs) to advance their products and innovations.

### The promising frontier of translational research

COVID-19 has rightly emphasized the need for the next phase of research, “translational research,” backed by solid fundamentals. A classic example is the messenger RNA-based vaccines that have been critical in saving lives and restoring normalcy. Such translational research endeavors enable startups to be successful, as has been the case with BioNTech and Moderna.

It is well understood that many innovations capable of changing our way of life happen in universities, as well as in other SMEs. Those technologies with value and utility must be taken out of the R&D “Valley of Death” and be translated into products. For SMEs to thrive, support for the startup culture is needed, including aversion to business risks and backing for marketing efforts that encourage SME business activities.

An example in the cellulosic materials field will enlighten how such support is needed for SMEs. Research on discounted cotton in the Nonwovens and Advanced Materials Laboratory at Texas Tech Univer-

**It is well understood that many innovations capable of changing our way of life happen in universities, as well as in other SMEs. Those technologies with value and utility must be taken out of the R&D “Valley of Death” and be translated into products. For SMEs to thrive, support for the startup culture is needed, including aversion to business risks and backing for marketing efforts that encourage SME business activities.**

sity has clearly shown the advantages of cotton not only as a biodegradable sorbent, but also because of its high sorption of toxic oil. However, to translate the technology to market, a manufacturer who could scale up the process and marketing support is needed. In other words, support for academics to gain the know-how to commercialize their ideas and gain financial support is needed. In this situation, professional associations like TAPPI have a greater role to play through connecting researchers with financiers and marketing people.

Additionally, apart from providing platforms to exchange technical ideas, associations like TAPPI can also focus on connecting the dots, like linking SMEs (and particularly startups) with corporations that have resources to move the technologies swiftly to consumers. Again, COVID-19 has shown that these connections are important. The collaborations with BioNTech and Pfizer and Oxford University with AstraZeneca to get the vaccines approved and delivered in record time are good examples.

The U.S. defense sector has also been a pioneer in supporting the translation of research ideas from

startups to the commercial space. The nonwovens decontamination wipe, FiberTect, is indeed a good example of how proven technology from an academic laboratory is saving the lives of warfighters and first responders because of the efforts of Chantilly, VA-based First Line Technology, a small enterprise focusing on advanced products that save lives.

Governments have a clear role in supporting not only basic research but also applied and translational research activities. It is encouraging that the Biden Administration is allocating additional resources to the National Science Foundation. More importantly, support for applied research and innovation is growing with the creation of the Directorate for Technology and Innovation (U.S. Senate Bill S.1260) within the National Science Foundation. Professional associations can also help with effective communication of ideas and policies to the government and the public on the importance of science and technology. **TJ**

*Ramkumar is the immediate past chair of TAPPI's NET Division and a professor of Nonwovens and Advanced Materials at Texas Tech University, in Lubbock, TX, USA.*

# BEST PRACTICES ON THE CORRUGATOR COURSE



**August 7–8, 2021**

**Co-located with  
SuperCorrExpo in Orlando, FL**

- **Learn proven best practices**
- **Achieve higher productivity**
- **Improve board quality**
- **Reduce waste & downtime**

**TAPPI.org/BESTCORR**

**REGISTER NOW** to attend this training alone or both events!