

Senator Rotundo, Representative Sachs, and distinguished Members of the Joint Standing Committee on Appropriations and Financial Affairs,

Thank you for the opportunity to share some thoughts in support of LD 416, *An Act to Authorize a General Fund Bond Issue for Research and Development and Commercialization*.

Funding from the Maine Technology Institute (MTI) has been an integral part of building a research economy in Maine. It's true, not all the funding goes to the University of Maine, though we have gotten our fair share. At last count the University had received 94 grants.

That said, a lot of the grants went to small start-ups founded by our graduates, like Cathy Billings, the founder of Lobster Unlimited¹. At Lobster Unlimited they develop new ways to recycle the waste from lobster processing and render it into commercially viable products.

Other MTI grants go to businesses where our graduates work, like Sappi North America. SAPPI received a \$1 million grant from MTI's Forestry Recovery Initiative to improve pulp yield in its Somerset Mill through a new chip treatment process.²

When we educate innovative thinkers at the University of Maine, it's great to have tools to keep them in Maine. MTI is one of those tools.

More personally at the University of Maine Advanced Structures and Composites Center (UMaine Composites Center) we received a \$500,000 grant from the Maine Technology Institute (MTI) in 2019 to explore how large-scale 3D printing can help Maine boatbuilders.

This grant helped us set three Guinness Book of World Records: world's largest prototype polymer 3D printer, largest solid 3D-printed object, and largest 3D-printed boat.³ And while it was fun to set that record, it's also important. Being a world leader helps put the University of Maine and our work on the global map. This kind of attention has already attracted tens of millions in financial interest ,

¹ <https://www.lobsterunlimited.com/>

² <https://www.mainetechnology.org/news/sappi-north-america-awarded-1-million-from-the-maine-technology-institute-as-part-of-maines-forestry-recovery-initiative/>

³ <https://umaine.edu/news/blog/2019/10/10/umaine-composites-center-receives-three-guinness-world-records-related-to-largest-3d-printer/>

brought talented people to our lab, and helped UMaine become an Carnegie R1 research university.

The project itself is also emblematic of the importance of MTI. The grant helped us forge significant collaboration with diverse industry leaders and it strengthens a legacy Maine industry, boatbuilding. The project includes UMaine engineers, researchers, and students. They work with Maine boat builders, like Back Cove Yachts in Rockland, Sabre Yachts in Raymond, Front Street Shipyard in Belfast, Hinckley Yachts in Trenton, Hodgdon Yachts in Boothbay, Lyman-Morse Boatbuilding in Rockland, Kenway Composites in Augusta, Custom Composite Technologies in Bath, and Compounding Solutions in Lewiston.

For the past 18 years, the UMaine Composites Center has been developing technologies to extrude plastics filled with wood cellulose and nanocellulose fibers. These plastics contain up to 50 percent wood fiber by weight. Now, we will use these same stronger and stiffer plastics in very large 3D printers to develop 20- to 100-foot boat molds and other boat parts for Maine boatbuilders. By 3D printing plastics with 50 percent wood, we aim to produce boat molds much faster and cheaper than today's traditional method lowering costs by as much as 50%.

Not only does it strengthen boat building, but it also supports the forest products industry. Our feedstock materials include a range of economical wood-filled materials for composite tooling applications. The use of the wood-based fillers significantly reduces the cost and increases the stiffness and toughness of the material, while reducing the environmental impact and improving recyclability. These technologies were developed in our lab at the University of Maine. The university works with Maine-based companies to develop a local supply chain for its unique, bio-filled materials.

All of this was jump-started with an MTI grant. I hope this testimony helps illustrate how Maine's investment in R&D can have far reaching impact on sustaining Maine's traditional industries, while adding value to our economy and our workforce.



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