

# Application of Surfactant Treated TEMPO Oxidized Cellulose Nanofibrils for 3D Printed Biopolymers

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The global energy transition necessitates the development of non-fuel petrochemical alternatives. Many non-fuel petrochemical products contain polymeric structures; replacement of these polymers is vital to the success of the energy transition. The problem with many biopolymers is that they lack the mechanical properties of commercial products – that’s where I come in...

My work this summer focused on the enhancement of composite materials containing biopolymers. Specifically, we examined the role a surfactant can have in coating reinforcement materials, enhancing the dispersion of said materials, and the effects on the mechanical properties. This real-world applicable research will undoubtedly benefit my students; the grounding of my practice in research from this program will provide me with countless experiences to draw on while teaching, and has inspired me to create lessons and an entire unit on inquiry based research for students in the classroom aligned to newly adopted PDE NGSS-aligned science standards.