

NOVEMBER 15, 2024 @ 10:00 AM | 102 COLBURN LAB



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ATOMS TO AUTOS: BRIDGING FUNDAMENTAL SCIENCE WITH APPLIED ENGINEERING TO ENABLE SUSTAINABLE TECHNOLOGIES TRANSFORMING THE MOBILITY INDUSTRY

The Pilla research group is involved in interdisciplinary research projects that encompass chemistry, engineering, and manufacturing, addressing crucial issues affecting human livelihoods and developing concepts beneficial to industry, education, society, and the environment. Their work spans the “Circular Economy” and “Sustainable Engineering” domains, drawing on the “Materials Genome Initiative” and “Hybrid and Intelligent Manufacturing Technologies”. Their research facilitates informatics-driven materials and manufacturing discoveries that pave the way for a truly sustainable future.

The presentation showcases the Pilla research group’s progress in advanced composites, titled ‘Atoms to Autos’, which combines fundamental science with applied engineering to foster sustainable technologies within the mobility industry. The research begins with the development of new polymer systems that are both 100% biobased and recyclable. It also introduces a circular non-isocyanate polyurethane foam technology that can be chemically recycled at the end of its service life. Furthermore, the presentation explores hybrid manufacturing techniques that integrate various technologies to produce multi-material constructs relevant to the automotive industry. It also provides insight into the world’s first carbon fiber-reinforced thermoplastic composites door project, showcasing the integration of precision engineering with innovative materials and manufacturing concepts.

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