



Bhausahaheb Rajput

EXPAND Mentor

Renewable and biodegradable thermoplastic polyurethanes (TPUs) for various applications

Prof. Michael D. Burkart/Burkart Lab (Oct, 2022)

What you will do

Nowadays the production of plastic or polymers has increased remarkably, resulting in the ubiquity of plastics in any individual's life. Most of the polymers used nowadays were derived from petroleum sources which are not biodegradable resulting in plastic pollution. The accumulation of small particles of plastic debris termed microplastics has had destructive consequences on marine and other animal life, associating as well with some serious human health problems. Considering the environmental and health issues, there is an urgent call for alternative materials options, one of which is biodegradable plastics. Thermoplastic polyurethanes (TPUs) attract significant attention because of their exceptional properties, including abrasion resistance, mechanical strength, transparency, and elasticity. Our lab at UC San Diego working on the development of new thermoplastic polyurethanes (TPUs) that are bio-derived and fully biodegradable. **The aim of this project to develop a various TPUs formulations and 3D printing filaments for various applications e.g. watch band, phone cases, etc.**

Skills you will acquire

- General idea of polymers
- Chemistry of thermoplastic polyurethanes
- Various formulations for thermoplastic polyurethanes
- Characterization of thermoplastic polyurethanes
- 3D printing filaments
- Thermoplastic polyurethanes applications