MWP

## MWP – Young Researcher Abstract 2024

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| **Project title:** We can make anything from the lignin and money ! | |
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| **Abstract :** The world is overwhelmed with plastics, from grocery stores to our houses we are surrounded with plastics. Presently, there are limited renewable alternative sources to replace plastic. One of the options is lignin which is abundantly found in the lignocellulosic biomass (LCB) and currently a by-product in biorefineries and pulp industries. Biorefinery lignins and lignins coming from the pulp industry holds great potential for substituting plastics in bio-based applications. In my PhD project, we designed a protic ionic liquid (PIL)-based lignin fractionation method. where triethylammonium methane sulfonate [N222H] [OMs] PIL was used to facilitate LCB into cellulose, hemicellulose and lignin. Further the lignin was fractionated into lower molecular weight lignin fractions (LMW) and the insoluble lignin (ISL). Later, the LMW were depolymerized with the help of engineered laccases and both depolymerized lignin fractions and ISL were characterized using advanced analytical techniques for plastic and pharmaceutical applications. Our vision is that the PIL based lignin fractionation method have the potential to be utilized at a large scale in order to substitute and developed the novel bio-based precursors that can be used as plastics in fibre-based applications and drugs scaffolds. | |
| **Key words:** Biorefinery lignin, Protic ionic liquid, Lignin fractionation, Fibre-based packaging, Drugs scaffolds | |