



## SYNTHESIS AND CHARACTERIZATION OF SWEET POTATO STARCH BASED COMPOSITE BIOPLASTIC BY INCORPORATION OF ZnO NANOPARTICLES

Saira Iqbal, Arjumand Iqbal Durrani, Ashi Rashid

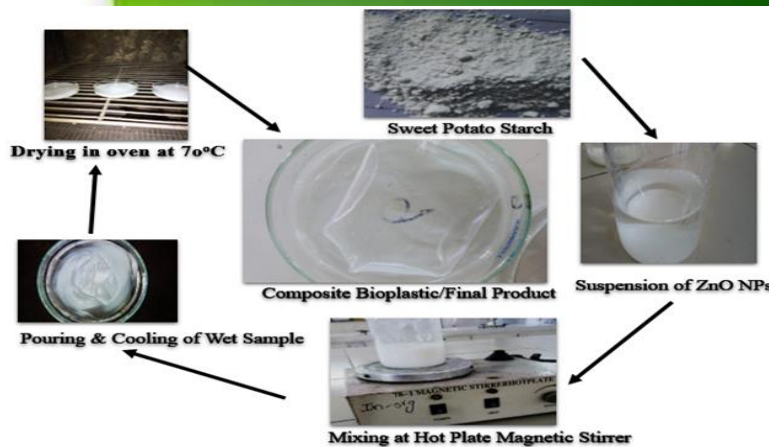
Department of Chemistry, Faculty of Natural Sciences, Humanities & Islamic Studies, University of Engineering. & Technology, Lahore, 54890, Pakistan

**Background/Objectives:** The adverse effects of conventional plastics have provoked scientists to make alternative plastics which is more environment friendly and compostable. The alternate way is to make low cost bioplastic which is biodegradable and can be easily transformed into natural substances.

The main objectives of this research work are summarized as follows:

- To prepare low cost and eco-friendly biodegradable plastic composites using sweet potato starch.
- To Study potential use of these bio nanocomposite material in the food packaging industry

### Experimental Setup



### Result/Discussion

The results from various analysis confirms the formation of bioplastic composite which is thermally stable and shows maximum UV absorption. The soil burial test shows that bioplastic is 85% biodegradable.

**Conclusion:** The biodegradable composite bioplastic is prepared from renewable energy sources and biogenically synthesized ZnO nanoparticles. The developed low cost bioplastic films can be an alternate source to the packaging industry.

### References:

- Tran, T. N., plMai, B. T., Setti, C., & Athanassiou, A. (2020). Transparent Bioplastic Derived from CO<sub>2</sub>-Based Polymer Functionalized with Oregano Waste Extract toward Active Food Packaging. *ACS Applied Materials & Interfaces*, 12(41), 46667-46677.
- Gill, M. (2014). Bioplastic: a better alternative to plastics. *International Journal of Research in Applied Natural Sciences*, 2(8),115-120.