



SCO-Young Scientist Profile

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**Designation: Scientist
& affiliation:**

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Details of research work carried out in S&T

Currently I am working in the area of agriculture waste management. I have been developing various biodegradable and edible plates from wide range of agriculture waste such as wheat bran, rice bran, sugarcane bagasse, fruit peels etc.,

In addition, I am working towards development of food packaging materials and vegan leather from pineapple leaves, banana stem and other relevant fruit/vegetable wastes.

Relevant Industrial Project: I have also undertaken a consultancy project for an industry AURA EXIM, Ernakulam for INR 5,00,000 for setting up of a 500 kg per day wheat bran processing plant for production of various biodegradable products such as plates, cups, straw etc.,

Relevant R&D Project: I have been sanctioned with one CDB (Coconut development board) project around 23.5 lakhs for the development of edible and biodegradable products and food packaging containers from coconut waste.

TECHNOLOGY TRANSFERS: The technology for production of various biodegradable products have been transferred to the following firms:

1. Auro Exim, Ernakulam
2. iSTED, DST
3. Heaven tree private limited, Thiruvananthapuram.

I have also developed various machineries for post processing agriculture crops for the

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framers, micro and macroscale industries and cooperative societies such as

1. Design and Development of microwave assisted fluidized bed dryer for spices:
<https://doi.org/10.1016/j.ifset.2020.102541>
2. Designed and developed a cocoa beans extractor for cocoa processing with increased efficiency and low processing time.
<https://doi.org/10.1016/j.compag.2020.105715>
3. Designed and developed a novel microwave assisted extraction process for nutmeg processing. <https://doi.org/10.1080/0972060X.2018.1517613>
4. Designed and developed machineries related to Jackfruit processing.
5. Designed and developed pulse electric field and microwave-assisted process for extraction pectin from jackfruit.
6. Designed a novel baking unit for baking process for mitigating acrylamide –a heat induced toxicant in baked food items under CSIR Mission mode project.
7. I am also currently working towards various consultancy projects in the area of process development, optimization and modeling studies.

Associated SCO-YSC Theme: Environment Protection and Natural Resource Management

Statement of Innovation

My Statement of Innovation and Future plans includes, but not limited to:

1. Development of versatile biodegradable products such as cups, bowls, plates, straw etc., from wide range of agricultural residues and by-products.
2. Development of biodegradable and user-friendly food packaging materials (container wrappers, food coverings etc.) from fruit and vegetable processing wastes like pineapple leaves, banana stem, water hyacinth etc.,
3. Development of vegan leather from agriculture residues and by-products by mechanical process and microbial process for handy craft application.
4. The developed technology (in process of applying patent) by steam-based compression is highly superior in terms of energy efficiency and processing time compared to other methods of bioplastics production.
5. Development of Post harvest machineries for food and agriculture processing to enhance shelf and quality

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Major awards/ Achievements

Awarded Technical Education Quality Improvement Programme Phase-II (TEQIP- II) Fellowship for conducting Doctoral research by National Project Implementation Unit (NPIU), unit of MHRD, Government of India, New Delhi, in the academic year 2012-2016.

Possible collaboration with SCO countries

I am interested to collaborate with Researcher working in the area of following topics

1. Biodegradable and bioplastic products development from agriculture waste
2. Biodegradable and user-friendly food packaging materials from agriculture waste
3. Biodegradable paper and paper based materials from agriculture waste
4. Vegan leather and its bio products development from agriculture waste for handy crafts and bags
5. Design and development of post-harvest agricultural processing equipment's

Key words

Biodegradable products, vegan leather, Food packaging materials and agriculture waste.