

Biodegradability for Biocomposites

General background:

Biocarbon (Biochar) is a high-carbon, fine-grained solid that can be produced through pyrolysis processes. This natural product is currently used to produce energy, but recent research indicates that it has a great potential in enhancing biopolymer properties. The biocarbon-biopolymer composite could provide a much needed fully sustainable solution. This would be especially interesting in agricultural and horticultural applications, since biocarbon has been found to be effective at retaining water and water-soluble nutrients and to increase micro-organism activity in soil. Biocarbon-biocomposites may also be used in other markets, where biodegradability is essential, including packaging and disposable consumer articles.

Goal of internship:

The student will execute aerobic biodegradability test for biocomposites in a controlled humidity and temperature environment. The biodegradability behavior of the biocarbon composites will be compared with the reference samples without biocarbon addition. The test will provide information on the compliance of the developed biocomposite products with the industrial product specifications.

The Project involves:

1. A brief report on the production and the characterisation of the biocomposite samples
2. Visual product samples from compounding (granules; test samples)
3. A brief report on the initial weathering and composting tests.
4. Visual samples on the weathering & composting tests
5. 3-6 prototype products (for example plant pot, clips, mulch film)

A part of the project concerns also environmental evaluation. The student will be required to evaluate impacts of 2 selected biocomposites in comparison to PLA.

Starting date

January 2021. The length of the assignment is 5 months. The student who will execute the assignment gets a fee of €350,- per month. The intern will be part of a research team supervised by Jappe de Best, Maurits Dorlandt and Chiara Franchi.

Desirable skills/qualities of the student

The student should be able to carry out independent laboratory and desk research. The preferred background is chemistry / environmental science (HBO). The interest in biocomposite structure and biodegradability processes is considered a plus.

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