

## **Synthesis of Cellulose Aerogel Fibers from Agricultural Residues and Considerations on its Continuous Production**

Short introductive summary:

Academia and industry have been developing ways to produce novel materials from renewable bio-based sources. We have been developing strategies to produce cellulose aerogel fibers from waste hemp fibers and study its continuous production using the LabLineCompact® technology. Alkali hydrolysis and bleaching established a simple method to extract high-grade cellulose from hemp waste fiber fibers. Cellulose solution was prepared by dissolution using a mixture of NaOH, urea, and water as solvent. Optimal parameters such as cellulose concentration and operational conditions of the LabLineCompact® were analyzed, and the production of highly porous aerogel fibers was accomplished from commercial and extracted cellulose.

After selection of the best parameters, up-scaling experiments were performed using a Fourné "Lab-to-Pilot" wet-spinning machine. Besides the valorization of waste biomass resources and the production of highly porous aerogel fibers, we developed a continuous system for producing, washing, and exchanging the solvent of the fibers before drying.

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Presenter's biography:

Diogo Costa is a doctoral student in the Marie Skłodowska-Curie European Industrial Doctorate consortium "Biobased Value Circle". His research is carried between an academic (German Aerospace Center in Germany) and industrial partner (KEEY Aerogel, France) on cellulose aerogels from biomass waste.

*Biographies and Short introductive summaries are supplied directly by presenters and are published here unedited*

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Session reference: 6AO.3.3

Subtopic: 6.1 Processes for bio-based chemicals and materials

Topic: 6. BIOMASS CONVERSION TO BIO-BASED PRODUCTS AND CHEMICALS