Post-Doctoral Fellowship in the project "Production and application of bio-based plastics processed by 3D-printing and extrusion technologies"

Position description

One post-doctoral fellowship is available in the project "Production and application of bio-based plastics processed by 3D-printing and extrusion technologies", within the scope of the Food Research Center (FoRC), a Research, Innovation and Dissemination Center (RIDC) supported by the São Paulo Research Foundation (FAPESP).

The fellow will develop scientific and applied research in producing, characterizing and applying starch-based plastics. Starches from different sources will be studied, both in their native form and/or after modification processes. Different starch modification techniques will be studied, such as ozone, DHT, HMT, ultrasound, irradiation, crosslinking, among others. The plastics will be produced also using plasticizers and/or reinforcers elements, through two techniques: 3D printing and thermoplastic extrusion. The obtained plastics will be fully characterized, including assessing their mechanical, optical, surface, barrier, functional and technological properties, degradation kinetics and behavior under different environments (soil, water, human body). A prospection of possible applications will be conducted, considering different uses, such as packages, biomedical applications, among others.

This work will be conducted within two research groups from the University of São Paulo (USP), the state of São Paulo, Brazil. The researcher will be based in the Laboratory of Food Engineering, *Escola Politécnica* (Poli), in the city of São Paulo, under the supervision of Prof. Dr. Carmen C. Tadini. Moreover, part of the project will be developed in the Food Process Engineering Group, Luiz de Queiroz College of Agriculture (ESALQ), in the city of Piracicaba, with the partnership of Prof. Dr. Pedro E. D. Augusto.

Once the fellow will work connecting both research groups, he/she should be a proactive and motivated person, as well as present the ability to work in teams, which will be fundamental for coordinating activities with other students and researchers.

For this position, the candidate must:

1. Have obtained his/her Ph.D. in the last 7 years by a University recognized by the University of São Paulo;
2. Be fluent in English;
3. Demonstrate experience in at least two of the following research fields: (i) 3D-printing technology, (ii) extrusion process, (iii) production, characterization and evaluation of bio-based plastics;

International experience is highly desirable, as well as an internationally competitive research record. Experience with applied research and patents are differential.

The candidate cannot have an employment relationship, and the candidate must dedicate exclusively to the research project. The position is open for Brazilian or foreign candidates.

The selected candidate will receive a Post-Doctoral fellowship from the São Paulo Research Foundation (FAPESP) which the stipend is R$ 7,373.10 for 24 months and can be renewed for 12 months. The Research Contingency Funds are intended for use in activities developed by the Fellowship holder, strictly related to the fellowship research project, during the term of the fellowship. The funds are equivalent to 15 percent of the annual value of the fellowship. More information about the fellowship at *www.fapesp.br/en/postdoc*.

Application

Candidates must send the documents by e-mail *forc@usp.br*

Documents needed (and how to name them), all of them in a pdf format:

1. Letter of interest (2-3 pages), contextualizing your academic record, experience, motivations and how you can contribute with this particular project; (name it as 1.letter_yourname.pdf);
2. A full CV; (name it as 2.CV_yourname.pdf);
3. A short CV (maximum 4 pages), containing a list with up to 10 most important and relevant publications and/or patents for this project, and the link to your Publons/MyResearchID, ORCID and Scopus IDs; (name it as 3.shortCV_yourname.pdf);
4. Copy of the doctoral/Ph.D. certificate; (name it as 5.Dr.certificate_yourname.pdf).
5. At least two recommendation letters, either in English or Portuguese, from other researchers. These letters must be sent directly to FoRC, at the e-mail address forc@usp.br, with the subject "Fellowship PD STARCH FoRC/CEPID - recommendation letter". The letters shall be sent as pdf files by the recommending researchers, and not by the applicant. They must be sent from an institutional e-mail address (such as researcher@university.edu). Recommendations sent from

commercial e-mail addresses (such as @yahoo.com or @gmail.com) will not be considered, as they cannot be verified.

Deadline: June 30th, 2021

Expected start date: September 1st, 2021

Production and application of bio-based plastics processed by 3D-printing and extrusion technologies

Characterization and application

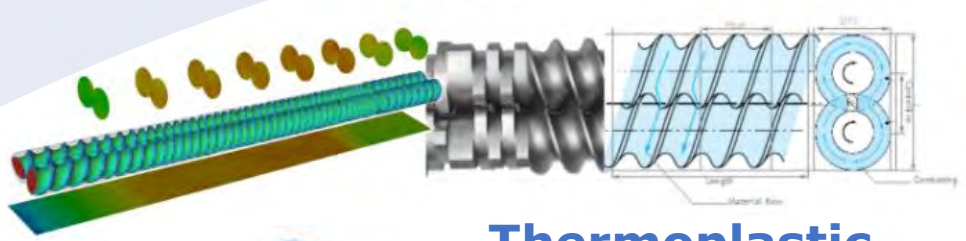
Processing

Material preparation

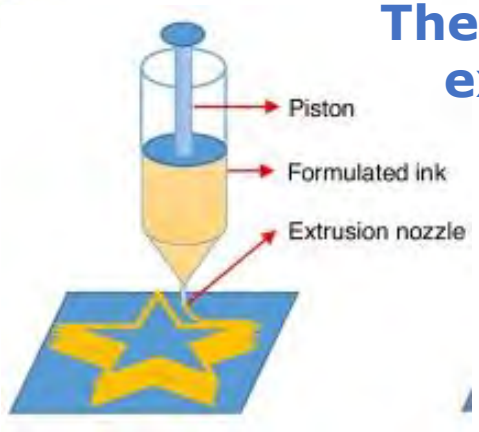
Plasticizers and/or reinforcers

Starch (native and/or modified)

Different protocols



Thermoplastic extrusion



3D-Printing