

Topic : Determination of the structure-property relationships of bio-based polyesters

Keywords : polymers, mechanical behavior, strain-induced structural evolution, crystallization

Host laboratory : Unité Matériaux Et Transformations (UMET) / CNRS

http://umet.univ-lille1.fr/index.php?&lang=en

Supervisor : Dr. Grégory STOCLET

E-mail : gregory.stoclet@polytech-lille.fr

Laboratory: Unité Matériaux Et Transformations (UMET) / CNRS

Group Polymer Systems Engineering : <http://umet.univ-lille1.fr/Polymeres/index.php?lang=en>

Level of studies :

Bachelor's level (undergraduate)

Master's level (postgraduate) x

Duration :

- 3 months
- 4 months
- 5 months

Type of evaluation

Written report and oral defense

Project description:

Lots of research efforts, from both academic and industrial research groups, are currently devoted to the development of new bioplastics so as to propose novel solutions for the replacement of petroleum based plastics. Among all the currently emerging biopolymers, bio-based polyesters know an increasing interest. These polymers, issued from renewable resources is foreseen to be used, for example, for bottle and film applications due to its excellent barrier properties. However, due to their novel character, structure-thermomechanical property relationships of this type of materials remain not fully understood.

In this way this project is aimed at characterizing the thermomechanical properties and the structure of bio-based polyesters such as Poly(Ethylene Furanoate) or Polylactide.

Besides, the main goals of the study are:

- The determination of the end-use properties
- The study of the mechanical behavior depending on the stretching conditions (uni- or biaxial stretching, temperature...)
- An in-depth structural characterization

No funding available from the laboratory.