

## Contents of Week 3

### Topics

In this week you may find all learning materials associated to Topic 3, "Plastics and Polymers". Three subjects are addressed: "Plastics and Microplastics", "Polymer Structure and Properties" and "Polymer Processing".

### Resources

The lecture about "Plastics and Microplastics" is presented by Prof. Vítor Alves, from the School of Agriculture. A brief definition of polymers and its production, the characterization of different plastic waste types, the transformation from macro (macroplastics) to molecular scale (polymer molecules) and the polymers degradation in the environment are treated in this lecture. Several videos are included to illustrate several aspects related to microplastics and their impact in the environment.

Prof. Augusto Moita de Deus, from Instituto Superior Técnico presents, a detailed description of the structure and properties of polymers. He first presents an historical overview of the use of different types of materials and discusses polymers in the general context of materials science and engineering. Then, he discusses the structure of these types of material and presents their main physical properties.

The techniques that may be used to process polymers (and to produce plastics) are presented by Prof. Beatriz Silva, from Instituto Superior Técnico. These techniques include extrusion, injection moulding, blow moulding, thermoforming, additive manufacturing and incremental forming.

As usual, advanced learning materials for all subjects discussed this week are also available for those who may be willing to deepen knowledge on those subjects.

### Activities

This week the second assignment is launched. You have three weeks to conclude the second challenge: "How much plastic do I use?".

The second Social Networking Activity is also launched. Do not miss the surprise activity our Ulisses mentors have prepared for you for next Saturday!

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Enjoy the week!

Ulisses Team

Lisbon, 2<sup>nd</sup> March 2021