UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

New Lignin-Based Sustainable Materials: Science and Technological Aspects (Intercurricular)

2223-94R-SCGA08

Title

New lignin-based sustainable materials: science and technological aspects.

Teacher(s)

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Language

English

Short description

Lignin is the second most abundant organic macromolecule in nature. Its extraction tends to increase worldwide, demanding new applications for an efficient lignin use. This course gives an overview on the whole lignin life cycle, from biosynthesis to industrial applications.

In particular, the following subjects will be developed:

- Chemistry of lignocellulosic materials

- Lignin biosynthesis, chemical structures and reactivity

- Lignin extraction processes (kraft, alkaline, organosolv)

- Main techniques in Lignin characterization (FT-IR, GPC, 31P-NMR, 13C-NMR, 2D-HSQC, EPR, SEM, ICP-AES)

- Plasma technology for lignin modification: plasma treatment aimed to surface functionalization for lignin-based composites

- Sustainability initiative in SABIC: certified polymers (biorenewable and circular polymers) and bio-based polymers (PEstarch blends and PE-lignin blends).

Evaluation: YES - oral colloquium

CFU / Hours

1 CFU - 8 Hours (Lecture)

Teaching period

I or II semester