

Università degli Studi di Trieste
Dipartimento di Scienze Chimiche e Farmaceutiche
Corso di Laurea Magistrale in Chimica

**HOMOGENEOUS CATALYSIS: INDUSTRIAL APPLICATIONS AND
PHOTOCATALYSIS**

Academic Year 2025-2026

MODULE OF HOMOGENEOUS CATALYSIS AND PHOTOCATALYSIS (4 CFU)

Professor:

Prof. **Barbara Milani**
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Length of teaching activity: about 32 hours.

Final Exam: one oral exam about both modules

Question time for students: every Friday from 3 pm to 5 pm based on previous appointment, and each time but scheduled in advance. The meeting takes place in prof. Milani's office at C11 building, 5th floor.

Textbooks:

Homogeneous Catalysis – Understanding the Art

Piet W.N.M. van Leeuwen
Kluwer Academic Publishers

Fundamentals of Organometallic Catalysis

Dirk Steinborn
Wiley VHC

Organometallics and Catalysis: an Introduction

Manfred Bochmann
Oxford University Press 2015

Fondamenti di Chimica Industriale

Cavani, Centi, Di Serio, Rossetti, Salvini, Strukul
Zanichelli

Photochemistry and Photophysics

Vincenzo Balzani, Paola Ceroni, Andrea Juris
Wiley

Contents of the module

Fundamentals of homogeneous catalysis

Carbonylation reactions: Monsanto and CATIVA processes; Lucite process

Hydrogenation reactions

Asymmetric catalysis: synthesis of L-DOPA, outersphere hydrogenation process

Hydroformylation reactions

Hydrocyanation reactions

Catalysis for polymerization: Ziegler-Natta catalysts, metallocene catalysts, Brookhart's catalysts

Catalysis for stereocontrolled polymerization: polypropene synthesis: Ziegler-Natta and metallocene catalysts

Fundamentals of homogeneous photocatalysis

Visit to the LyondellBasell industrial plant in Ferrara.