



# Seminars at the Department of Chemistry and Industrial Chemistry



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## Claudia Antonetti

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## CV

Claudia Antonetti is Associate Professor of Industrial Chemistry at University of Pisa. She has taken her Master degree cum laude at University of Pisa in 2006 and received her PhD cum laude at Scuola Normale Superiore (Pisa) in 2010. In 2008-2009, she spent 6 months at the Chemistry Department of University of Cambridge (UK). In 2015, she has taken the certificate of Post-graduate Course (Master) in Bioenergy and Environment at University of Florence together with C.R.E.A.R. (Research Center for Alternative and Renewable Energy). She is the holder of the course "Chimica Industriale A+B" (Inorganic Industrial Chemistry) and the modules "Laboratorio di Principi di Chimica Industriale" (Laboratory teaching) and "Esercitazioni di Principi di Chimica Industriale" (Exercise) of the course "Principi di Chimica Industriale e Laboratorio", for the Bachelor Degree Course in "Chimica per l'Industria e l'Ambiente" (Chemistry for Industry and Environment). She has also positions of co-teaching for the courses "Chimica Industriale e Laboratorio II" (Industrial Chemistry II and Laboratory) and "Laboratorio di Preparazioni Chimiche Industriali" (Laboratory for Industrial Chemical Preparations) for Master Degree Course in "Chimica Industriale". The main interests concern the applied catalysis and the production of important platform chemicals from renewable resources. In particular, C.A. has dealt with the synthesis, the characterization and the applications of nanostructured catalysts based on Ru, Pd, Au, Cu and Ag, developing an in-depth knowledge and expertise regarding their preparation under sustainable reaction conditions. The obtained systems were tested in many reactions, with special attention to the hydrogenation ones. At the same time, C.A. has studied the integrated and catalytic conversion of several types of biomasses, including waste ones, for the recovery of sugars and chemicals of relevant industrial interest, such as 5-hydroxymethylfurfural, furfural and levulinic acid, for their further exploitation to biofuels, energy, chemical products and advanced plastic materials, through sustainable processes with low environmental impact, autocatalytic and/or catalytic ones, employing traditional and/or microwave heating. C.A. is co-author of more than 50 scientific publications on international journals, 1 patent and more than 90 communications to national and international congresses. Finally, C.A. has collaborated and/or taken part in many European, national and regional projects and she has an H-index of 19.

**Martedì 21 Gennaio 2020**

**Aula Magna  
ore 14.30**

***Production and exploitation of  
valuable platform chemicals obtained  
from biomasses through sustainable  
processes***

## Abstract

The lack of fossil resources expected in the next future together with the environmental problems are driving the academic and the industrial research towards the exploitation of alternative renewable resources, such as the lignocellulosic biomass. It is a very promising feedstock, being abundant, cheap and mainly composed by three biopolymers (cellulose, hemicellulose and lignin), each of them precursor of valuable products [1]. Among these last compounds, 5-hydroxymethylfurfural (HMF) and levulinic acid (LA) have been classified by the United States Department of Energy as ones of the top-12 promising building blocks, being value-added intermediates for the synthesis of new biofuels, solvents, pharmaceuticals and plasticizers [2,3]. In this framework, the aim of the present seminar is an overview regarding sustainable syntheses of HMF and LA from both model compounds and dedicated and waste biomasses carried out by our research group, according to the principles of *Green Chemistry*. The adopted synthetic procedures employing both homogeneous and heterogeneous catalysts are simple, economic and can be easily employed for industrial scale-up under the biorefinery perspective. In addition, results regarding HMF and LA further exploitation to biofuels, energy, chemical products and advanced plastic materials, through sustainable processes with low environmental impact, will be presented and discussed.

[1] K. Kohli, R. Prajapati, B.K. Sharma, *Energies* **2019**, 12, 233-272.

[2] R.J. Van Putten, J.C. Van Der Waal, E. De Jong, C.B. Rasrendra, H.J. Heeres, J.G. De Vries, *Chemical Reviews* **2013**, 113, 1499-1597.

[3] F.D. Pileidis, M.M. Titirici, *ChemSusChem* **2016**, 9, 562-582.

To find out how to reach the Department, go to <http://www.chimica.unige.it>. For further informations on this specific seminar or in order to ask for an appointment with the speaker after or before the seminar, contact Prof. Antonio Comite, room 830 ☎ +39 010 3536197 e-mail: [acomite@chimica.unige.it](mailto:acomite@chimica.unige.it)