



# UNIVERSITÀ DEGLI STUDI DELL'AQUILA

**Prof. Pier Ugo Foscolo**

**Curriculum scientifico**

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## Personal Data

Born: Rome, Italy, November 24, 1948

Married, two children

Master degree (1972) in Chemical Engineering at the University "La Sapienza", Rome, Italy

Professor in Chemical Reaction Engineering

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## Employment history

Full Professor (1989 - Present)

Department of Chemistry, Chemical Engineering and Materials

University of L'Aquila, L'Aquila 67100, Italy

Associate Professor (1983 - 1989)

University of L'Aquila, Italy

Research Associate (1980 - 1982)

Department of Chemical and Biochemical Engineering, University College London, UK

Research Fellow (1974 - 1979)

University of L'Aquila, Italy

## Professional Societies

- AIChE, American Institute of Chemical Engineers
- AIDIC, Italian Chemical Engineering Society

### Selected Activities

- Coordinator of the EU project UNIQUE 211517 (2007 ? present) on ? Integration of particulate abatement, removal of trace elements and tar reforming in one biomass steam gasification reactor yielding high purity syngas for efficient CHP and power plants?. This project has been funded by the European Commission as a result of the first Energy call of the 7th EU Framework Programme, getting 14.5/15 in the evaluation by the referees, the very best score among thousands of proposals that have been presented from all over Europe. The main objective of the project is to develop a compact version of a gasifier by integrating the fluidized bed steam gasification of biomass and the hot gas cleaning and conditioning system into one reactor vessel.
- Coordinator of the EU funded project JOR3-CT2000-0314 (2001 ? 2004) ?Biomass-gasification and fuel-cell coupling via high-temperature gas clean-up for decentralised electricity generation with improved efficiency?. The Trisaia biomass gasification pilot plant (500 kWth) has been equipped with a gas cleaning section needed to feed the fuel gas to a molten carbonate fuel cell (MCFC). In addition, research activities included further studies on the catalyst reactivity, integrated system simulation and CFD modelling of the gasifier.
- Leader of the University of L'Aquila research group in the EU funded project JOR3-CT98-0196 (1998 ? 2000) ?Hydrogen-rich gas from biomass steam gasification?. A 500 kWth pilot unit has been built based on a dual, internally circulating fluidised bed gasifier, able to produce a fuel gas with high calorific value (almost negligible nitrogen content). The plant is located in the Trisaia research centre of ENEA. The gasification tests carried out at L'Aquila University allowed to verify the performance of a newly developed Nickel catalyst to be utilised in the gasifier bed inventory for tar cracking and reforming and to enhance the hydrogen content in the product gas.
- Coordinator of the EU funded project JOR3-CT95-0037 (1995 ? 1997) ?Production of hydrogen-rich gas by biomass gasification: application to small-scale, fuel cell electricity generation in rural areas?. Beyond the coordination of the whole project, the research group worked to the feasibility of the integrated plant and to the cost analysis.
- Leader of the University of L'Aquila group in the TEMPUS IV EU Project ?Chemical Engineering: Curriculum development and international recognition? (2009 - ).
- Coordinator of TEMPUS Tacis Project JEP-10096 in Chemical Engineering education, involving Italy, United Kingdom and Kazakhstan (1995 - 1998); honorary professor at the Kazakh National Technical University, Almaty.
- Coordinator of Research Projects funded by Italian public institutions and industries; among these:
  1. **MIUR** (Ministero Istruzione Università e Ricerca).?Fluid-dynamic similarity in fluidized bed reactors?;

2. **LONZA S.p.A.** "Fluid-dynamics of reactors and fluidized beds?";
3. **EUROPEAN VINYL CORPORATION S.p.A.** "Cold modelling studies of fluidized bed reactors";
4. **ITALIAN NATIONAL AGENCY FOR NEW TECHNOLOGY, ENERGY AND ENVIRONMENT (ENEA)** "Fluidized bed gasification technologies of agro-industrial wastes for electricity production"; "Zero emission processes yielding a hydrogen rich gas from coal gasification?";
5. **PALL SCHUMACHER GmbH** "Gas filtration and catalytic filtration at high temperature".
  - Director of studies in Chemical Engineering at the University of L'Aquila (2000 ? 2003).
  - Member of the Administrative Council of the University of L'Aquila (2004 ? 2007).
  - Dean of the Engineering Faculty at the University of L'Aquila (2007 - 2012).
  - Member of scientific committee of numerous international conferences, among these the World Chemical Engineering Conference (Glasgow ? UK ? August 2007), and the Int. Conf. on Polygeneration Strategies (Vienna ? Austria ? September 2009).
  - Chairman of the scientific committee of the Fluid-Particle Interaction Conference, Davos, Switzerland, May 1993, organised by Engineering Foundation, New York.
  - Co-Chairman of the International Symposium on Chemical Reaction Engineering, ISCRE25, Florence, May 2018.
  - Visiting professor at the University Louis Pasteur, Strasbourg, France (June-July 2008).
  - Regular reviewer for: Chemical Engineering Science, AIChE Journal, International Journal of Multiphase Flow, Industrial and Engineering Chemistry Research, Powder Technology, International Journal of Hydrogen Energy, etc. Guest Editor for Chemical Engineering Journal in 2018-2019.
  - Author of more than one hundred papers in international scientific Journals and Conference proceedings.
  - Expert appointed by the European Commission to review research proposals in the field of renewable energy sources.
  - Supervisor of a number of PhD projects; among these, a cotutela project with the University of Strasbourg about CO<sub>2</sub> capture by means of a solid sorbent.
  - Member of the Working Party on Chemical Reaction Engineering of the European Federation of Chemical Engineering.
  - Member of the Steering Committee of AIChE (Associazione Italiana di Ingegneria Chimica).

#### Areas of Research Interests

- Biomass gasification
- Fluidization
- Fluid-particle interactions