Curriculum Vitae

EDUCATION

10/01/2017| PhD in Chemical and Materials Sciences, Department of Chemistry, University of Turin. Title: "Structural and surface study of Metal nanoparticles-based catalysts and relative supports". Supervisor: Prof. Elena Groppo.

11/10/2013| Master's Degree in Materials Sciences (110/110 cum laude), Department of Chemistry, University of Turin.

CURRENT POSITION

From 01/10/2021| Assistant professor (RTD-B), SC 03/A2, SSD CHIM/02, Department of Physical and Chemical Sciences, University of L'Aquila.

PREVIOUS POSITIONS

01/10/2019 – 30/09/2021| Post-doctoral Fellow (Assegnista di Ricerca), Department of Physical and Chemical Sciences, University of L'Aquila.

06/02/2017 – 05/08/2019| Post-doctoral Fellow, Department of Chemistry, University of Oslo.

AWARDS

24/09/2020| "Premio Robert K. Grasselli 2020" assigned to a young Italian scientist for his relevant contribution in gas-phase heterogeneous catalysis, awarded by Gruppo Interdivisionale di Catalisi of the Italian Chemical Society.

27/04/2018| "ISIS Neutron and Muon Source Impact Awards 2018 - Economic Award" for the study "Neutrons for Catalysis: the case of Activated Carbons", awarded by UK Science and Technology Facility Council.

SUPERVISION OF STUDENTS AND EARLY-STAGE RESEARCHERS

From 2019 |Co-supervisor of 1 student for the Master's Degree in Chemical Science and 1 student for the Bachelor Degree in Chemical and Materials Science and Technology, Department of Physical and Chemical Sciences, University of L'Aquila.

2016 |Co-supervisor of 1 student for the Master's Degree in Chemistry, Department of Chemistry, University of Turin.

TEACHING ACTIVITIES

From A.A. 2021/22| Principal teacher of the course "Physical Chemistry 1 with Laboratory" (SSD CHIM/02 - course code: F0303 - 9 CFU), Bachelor's degree in chemical and Materials Science and Technology, University of L'Aquila.

A.A. 2015/16| Laboratory assistant for the course of "Spectroscopy and Microscopy methods with laboratory - [MFN1257]"; Bachelor's degree in Materials Science and Technology, University of Turin.

A.A. 2014/15| Laboratory assistant for the course of "Metallic materials and laboratory - [MFN1268]"; Bachelor's degree in Materials Science and Technology, University of Turin.

A.A. 2013/14| Laboratory assistant for the course of "Organic chemistry and laboratory - [MFN0648]"; Bachelor's degree in Materials Science and Technology, University of Turin.

COMMISSIONS OF TRUST

11/2019 - 02/2022| Guest Editor for the Special Issue of Materials (MDPI) - Special Issue title: “Advanced Nanostructured Materials for Catalytic Applications towards Fine Chemicals Production”

From 2017| Reviewer for the following international publishers: ACS, RSC, Elsevier, MDPI.

RESEARCH EXPERIENCE AND PRINCIPAL INTERESTS

Andrea Lazzarini spent his whole academic career performing physico-chemical studies of heterogeneous catalysts, often employing cutting-edge characterization techniques under in-situ and operando conditions.

He obtained his Master Degree in Materials Science in October 2013 at the University of Torino, with a thesis devoted to the study of Selective Catalytic Reduction of NOx by means of Cu-CHA zeolites, focused on the catalysts physico-chemical characterization, especially with DR-UV-Vis, FT-IR and X-Ray Absorption spectroscopies. The latter two techniques have also been extensively employed in-situ and operando conditions.

His PhD activity at the University of Torino (January 2014 - January 2017) in collaboration with Chimet S.p.A., a leading industry in the field of noble-metal supported catalysts, had the main goal of unraveling the properties and the structure-activity relationship of palladium and platinum nanoparticles supported onto activated carbons/alumina/functionalized polymers employed for selective hydrogenation and oxidation reactions; physico-chemical techniques (such as Inelastic Neutron Scattering, XPS, Raman spectroscopy, operando XAS, operando FT-IR and catalytic tests) were at the base of the obtained results.

From February 2017 to August 2019, he joined the Department of Chemistry at the University of Oslo for a postdoctoral research fellow in the framework of the CONFINE project (financed by the Norwegian Research Council), finalized to the study of the eventual confinement effect of gaseous molecules inside porous catalysts, with the role of performing and coordinating the experimental spectroscopy activities of the research group. Exploiting the huge know-how of the group in tuning the synthesis of the MOFs to obtain the desired properties, materials with UiO-67 framework and bi-pyridine anchoring points inserted as linkers in the structure were employed for gas phase catalysis. Different metal ions (Ni2+, Pd2+ and Pt2+) were inserted in the MOFs and studied with in-situ and operando FT-IR, in-situ and operando XAS, and catalytic tests either for ethene dimerization (with Ni2+ as active phase) or for CO2 hydrogenation (with Pt2+ and Pd2+ as active phase). Collaterally, he has been involved in several other side-projects respect to the main one, mainly on several zeolites and zeotypes employed for gas-phase Methanol-to-Hydrocarbons and Methane-to-Methanol reactions.

Afterwards, he joined the Department of Physical and Chemical Sciences at the University of L’Aquila in October 2019 working on the heterogenization of organometallic complexes for liquid-phase oxidation reactions, by supporting them onto coated Magnetic Nanoparticles with ease of recovery. Nowadays his research activity at the University of L’Aquila also expanded towards the development and characterization of ceria-based catalysts for CO abatement from industrial exhaust gases, in the preparation and characterization of new generation Metal Phenolic Networks with possible applications in catalysis and diagnostic imaging, and in the development of new metal-organic materials for water-splitting reaction.

PARTICIPATION TO RESEARCH PROJECTS

2016 - 2020| “CONFINE - Unravelling the potential of confinement effects in catalysts and adsorbents”, financed by the Norwegian Research Council. Role: Participant in the 2017-2019 period; PI: Prof. U. Olsbye, University of Oslo.

MAJOR COLLABORATIONS

Collaborations with International Academic and Research Institutions: University of Oslo (Norway), Prof. U. Olsbye, Prof. K. P. Lillerud, Prof. S. Svelle; International Research Institute “Smart Materials” (Russian

Federation), Prof. A. V. Soldatov; ESRF (France), Dr. K. A. Lomachenko, Dr. A. Longo, Dr. W. Van Beek; University of Turin (Italy), Prof. E. Groppo, Prof. S. Bordiga.

Industrial collaborations: Chimet SpA (Italy), Dr. R. Pellegrini.

PUBLICATIONS

- 39 peer-reviewed articles on international journals (8 as first author; 7 as corresponding author; 1 Review).

Bibliometric Indexes and IDs - Scopus (Google Scholar), 25/05/2021
- Sum of Times Cited: 915 (1089)
- h-index: 15 (17)
- Scopus Researcher ID: 56149529700
- ORCiD: 0000-0002-0404-6597

CONTRIBUTIONS TO CONGRESSESS AND SCHOOLS

- Presenting Author for: 12 oral contributions to International (9) and National Conferences (3); 4 poster contributions to National and International Conferences.
- Co-Author for > 100 oral and poster contributions.
- Co-organizer for: 1 International School.

EXPERIMENTS AT LARGE SCALE FACILITIES

Co-proposer and/or member of the experimental team for 13 experiments at international synchrotron sources, including ESRF (France), SLS (Switzerland), Soleil (France), Diamond (UK) and Elettra (Italy); main proposer for 3 experiments.

Co-proposer and/or member of the experimental team for 2 experiments at international neutron sources, including ISIS (UK) and ILL (France).