

Prof. Andrea Melchior

Associate Professor of Principles of Chemistry for Applied Technologies (CHIM/07)

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2023 – National Scientific Qualification as full professor renewed (2021 4th quarter call) for the academic discipline (AD) **CHIM/07 Principles of Chemistry for Applied Technologies** (academic recruitment field, AF, 03/B2). Positive evaluations: 5/5.

2021 – National Scientific Qualification as full professor (2018 6th quarter call) for the AD:

- CHIM/02 Models and Methodologies for Chemical Sciences (AF, 03/A2) Positive evaluations: 5/5.

2017 – National Scientific Qualification as full professor (2016 1st quarter call) for the following ADs:

- CHIM/07 Principles of Chemistry for Applied Technologies (AF, 03/B2). Positive reviews: 5/5.

- CHIM/03 Fundamentals of Chemical Sciences and Inorganic Systems (AF, 03/B1). Positive reviews: 5/5.

2015 – Associate professor for the AD CHIM/07 (AF, 03/B2)

2014 – National Scientific Qualification (2012 call) for the role of associate professor for the AD CHIM/07 (AF, 03/B2)

09/2013- 12/2013 – Visiting scholar Lawrence Berkeley National Laboratory (Berkeley, CA USA)

2012 – Confirmed in the role as researcher for AD CHIM/07 with a “largely positive” opinion from the Evaluation Committee

2009-2011 (1.5 years) Visiting researcher at the Department of Physical Chemistry of the University of Seville (Spain).

2008 – University Researcher in the SSD CHIM/07 at the University of Udine

2007 – Visiting researcher at the CEA (Grenoble) 2 months

01/2006 – 08/2009 – Research fellow at the University of Udine

01/2005-01/2006 – Postdoctoral fellowship at the CEA (Commissariat à l'Energie Atomique) of Grenoble (France)

2000-2004 – PhD in Chemical and New Materials Technologies (XVII cycle) University of Udine, Department of Chemical Sciences and Technologies.

2000 – Degree in Chemical Sciences at the University of Trieste.

TEACHING

Prof. Melchior carried out his teaching within the academic sector “Principles of Chemistry for Applied Technologies” in the Engineering courses of the University of Udine. Over the years, the courses have been held in the bachelor’s degree courses in Mechanical, Electronic, Management and Industrial Engineering for Environmental Sustainability and in the Master 's Degree courses in Environmental and Resources Engineering, and Environmental and Energy Engineering. Furthermore, the teaching activity has also been carried out in the PhD school in Energy and Environmental Engineering Sciences.

RESEARCH

Prof. Melchior’s research activity has developed mainly in the study of solution chemistry of metal ions and their complexes with particular attention to application issues in the fields of energy, environment, circular economy and of biomedical applications.

Principal Investigator of the Thermodynamics and Modeling research group. Limited to the last ten years, he performed research in the following areas, also in the framework of numerous national and international projects and collaborations:

- Application of *green solvents* for recycling critical materials in the circular economy: structural, kinetic and thermodynamic properties of metals in solution and selective separation processes.
- Lanthanide complexes for luminescent imaging and sensing: structure and thermodynamic properties of metal ion complexes in aqueous and organic solution, relevant for bio-analytical environmental applications.
- Metal complexes with anti-tumor activity
- (Nano)materials for drug recovery and release: experimental and theoretical studies
- Modeling and experimental study of adsorption phenomena for the removal of pollutants from water.

Principal investigator and/or participant in several national and international research projects selected on the basis of peer review process, as well as in various regional projects. Responsible for various projects for access to large research infrastructures such as synchrotrons and supercomputing centers. Responsible for financing as part of the university's strategic plans.

Member of the managing board of the PhD in Energy and Environmental Engineering Sciences and **supervisor** (or co-supervisor) of 7 doctoral students. Previously collaborated on the thesis of 2 other doctoral students.

Supervisor for various postdocs financed with his own projects or thanks to university co-financing obtained following selection.

Articles in international journals. Author of 95 publications in international *peer-reviewed journals* reviewed by ISI WOS and Scopus. H-index = 26 (Scopus), 25 (WOS), 27 (Google Scholar), 26 (Researchgate).

Contributions to conferences. Author or co-author of approximately one hundred contributions at national or international conferences: contributed oral communications, lectures on invitation and posters.

Editor of: "Frontiers in Chemistry" (Frontiers, Q2 in 'Chemistry, Multidisciplinary', associate ed.), Journal of Thermal Analysis and Calorimetry (Springer, Q1 in 'Thermodynamics', guest ed., 2022). Associate Editor for the journal "Processes" (MDPI, Q2 in 'Chemical Engineering') and previously Guest Editor for the same journal.

Reviewer for numerous international journals (e.g. J Mol Liq, Sep Pur Technol, Inorg Chem, Dalton Trans, J Phys Chem B, PCCP ...)

Reviewer /evaluator for regional, national and international research programs and calls and for various doctoral theses in international universities.

Member or president of the organizing committee of various national and international conferences (ISMEC2005, ICFE-11, AICAT2021 among others...).