

Prof. Enzo Alessio

Curriculum of Scientific and Didactic Activity

Updated November 2020

h-index: 57 (Scopus)

EDUCATION AND PROFESSIONAL CAREER

- 1982 Master Degree (*cum laude*) in Chemistry (University of Trieste, Italy)
- 1983-1984 Research fellow at the Department of Chemistry, University of Trieste
- 1985 Research Associate at the *Istituto Guido Donegani* of Novara, research center of the chemical company Montedison SpA
- 1989 Ph. D. in Chemistry (University of Ferrara, Italy, jointly with Trieste and Venice)
- 1990-2000 Assistant Professor of Inorganic Chemistry (Faculty of Sciences, University of Trieste)
- 1991-1992 Postdoctoral researcher (recipient of a NATO-CNR Fellowship) at Emory University, Atlanta (USA), supervisor Prof. Luigi G. Marzilli
- 2000-2020 Associate Professor of Inorganic Chemistry (Department of Chemical and Pharmaceutical Sciences, University of Trieste).
- 2005-2009 Director of the PhD Course in Molecular Sciences of the University of Trieste.
- 2006-2012 Director of the PhD School in Chemical and Pharmaceutical Sciences and Technologies of the University of Trieste.
- 2008 (1 month) Visiting Professor, Université Louis Pasteur, Strasburg (France).
- 2008 Acquisition (for the Department) of a new Varian 500 NMR spectrometer by virtue of a substantial grant (500.000 €) obtained from the Fondazione CRT.
- 2008-present Responsible for the NMR facility of the Department
- 2011-2012 Vice-director of the Department of Chemical and Pharmaceutical Sciences.
- 2012-2016 Member of the Board of Professors of the PhD School in Chemistry (in conjunction with the University of Venice since 2014).
- 2013 National scientific qualification (*Abilitazione Scientifica Nazionale 2012*) to Full Professor in the area 03/B1 (*Fondamenti delle Scienze Chimiche e Sistemi Inorganici*) and 03/B2 (*Fondamenti Chimici delle Tecnologie*). The evaluations, taken from the official website (Sito Docente), are attached.
- 2014-2016 Department delegate for scientific research
- 2016 (6 months) Visiting professor at the University of Zurich (Switzerland)
- 2018 National scientific qualification (*Abilitazione Scientifica Nazionale 2016*) to Full Professor in the area 03/B1 (*Fondamenti delle Scienze Chimiche e Sistemi Inorganici*). The evaluation, taken from the official website (Sito Docente), is attached.
- 2019 Appointed Coordinator of the PhD School in Chemistry (start date 01/11/2019), joint doctorate between the University of Trieste and the University of Venezia "Cà Foscari".
- 2020 Appointed full professor at the Department of Chemical and Pharmaceutical Sciences of the University of Trieste in the area 03/B1 (*Fondamenti delle Scienze Chimiche e Sistemi Inorganici*).

AWARDS

- 1985 *Stampacchia Award* for the first publication in the field of Chemistry.
- 1996 *Nasini Award* from the Italian Chemical Society for young researchers (age < 40) in Inorganic Chemistry.

INTERNATIONAL NETWORKING

- 1995-2001 Coordinator of the Working Group (WG) COST ‘The development of ruthenium antitumor compounds’ (COST Chemistry Action D1 1995–97 and COST Action D8 1997–2001).
- 2000-2006 Coordinator of WG ‘Design of novel, innovative metal anticancer drugs’ (COST Chemistry Action D20 ‘Metal compounds in the treatment of cancer and viral diseases’).
- 2000-2003 **Vice-Chairman** of COST Chemistry Action D20.
- 2003-2006 **Chairman** of COST Chemistry Action D20.
- 2004-2009 Coordinator of WG ‘Metal-mediated nanoscopic assemblies of chromophores for molecular electronics, light energy conversion, and molecular recognition’ (COST Chemistry Action D31 ‘Organising Chemical Systems with Selected Functions’).
- 2005-2010 Italian representative in the Management Committee and coordinator of WG ‘Ruthenium anticancer compounds’ (COST Chemistry Action D39 ‘Metallo-Drug Design and Action’).
- 2012-2016 Italian representative in the Management Committee and participant to WG ‘Metal bioconjugates for targeting and delivery’ (COST Chemistry Action CM1105 ‘Functional metal complexes that bind to biomolecules’).

EDITORIAL ACTIVITY

- 2005-2012 Member of the International Advisory Board of the *European Journal of Inorganic Chemistry*
- 2007-present Member of the International Advisory Board of the *South African Journal of Chemistry*
- 2012-2016 Member of the Editorial Board of the *Journal of Inorganic Biochemistry*
- 2012-present Member of the Editorial Board of the *European Journal of Inorganic Chemistry*
- 2014-present Member of the Editorial Board of *Inorganica Chimica Acta*

REFEREEING AND EVALUATION ACTIVITY

- I regularly act as reviewer for several Chemistry ISI Journals (an average of 60-70 manuscripts per year).
- I was/am in the evaluation panel of national and international research proposals for public and private Institutions.
 - **Public:** PRIN and FIRB Projects and VQR for the Italian Ministry of University, ANR (France), CNRS (France), ERA-Chemistry (EU), FCT (Portugal), NWO (The Netherlands), National Science Foundation (USA).
 - **Private:** FRC foundation (France), Genesis Oncology Trust (New Zealand), Italian-French University, ICREA (Spain).
- I was in the evaluation panel of several PhD students in chemistry in Italy and abroad:
 - University of Leiden (The Netherland, 4 times)
 - University of Strasbourg (France, 2 times)
 - University of Lausanne (Switzerland)
 - University of Dublin (Ireland)
 - Royal College of Surgeons of Dublin (Ireland, 3 times)
 - Universidad del Pais Vascos (Spain)
 - University of Florence (Italy, 3 times).
- I was asked to evaluate the career achievements (for promotion) of researchers from Warwick University (UK), Dublin University and Royal College of Surgeons (Ireland), University of Strasburg (France), University of Leiden (The Netherlands).

- 2013 Appointed as expert by the EU-Research Executive Agency (REA) for the mid-term evaluation of two ITN Networks (acronyms: RADIOMI and TRACEnTREAT) within FP7-PEOPLE-2013-ITN.
- 2015 Member of the Chemistry Panel of the Portuguese *Fundação para a Ciência e a Tecnologia* (FCT) for the evaluation process in the 4th “FCT Investigator” call (see <http://www.fct.pt/apoios/contratacaodoutorados/investigador-fct/avaliacao>).
- 2016 Appointed as expert by the EU-Research Executive Agency (REA) for the evaluation of the individual proposals submitted within the work programme Marie Skłodowska-Curie 2016-2017 (call H2020-MSCA-IF-2016).
- 2017 Appointed as expert by the EU-Research Executive Agency (REA) for the mid-term evaluation of the ITN Network MULTI-APP within H2020.
- Appointed as expert by the EU-Research Executive Agency (REA) for the final evaluation of the ITN Network RADIOMI within FP7-PEOPLE-2013-ITN.
 - Member of the Chemistry Panel of the *Portuguese Fundação para a Ciência e a Tecnologia* (FCT) for the evaluation process in the “2017 ST&TD project grants”.
 - Appointed as expert by the EU-Research Executive Agency (REA) for the evaluation of the individual proposals submitted within the work programme Marie Skłodowska-Curie (call H2020-MSCA-IF-2017).
- 2018 Member of the evaluation panel for the selection of a “Primo Ricercatore CNR” position (Bando n. 367.171 PR Area Strategica Biomolecole e Biomateriali per la Salute).
- Member of the Chemistry Panel of the *Portuguese Fundação para a Ciência e a Tecnologia* (FCT) for the evaluation process of proposals in the programme "Stimulus of Scientific Employment, Individual Support - 2017".
 - Appointed as expert by the EU-Research Executive Agency (REA) for the evaluation of the individual proposals submitted within the work programme Marie Skłodowska-Curie (call H2020-MSCA-IF-2018).
 - Member of the panel for the admission of master students to the “Collegio Universitario Luciano Fonda” of Trieste.
- 2019 Member of the evaluation panel for the selection of a tenure-eligible lecturer (Inorganic chemistry, UB-LE-517) by the Serra Hünter Programme of the University of Barcelona (Spain).
- Appointed member of the evaluation panel for the selection of a tenure-eligible lecturer (Inorganic chemistry, UB-LE-7030) by the Serra Hünter Programme of the University of Barcelona (Spain).
 - Member of the panels for the admission of bachelor and master students to the “Collegio Universitario Luciano Fonda” of Trieste.
 - Appointed as expert by the EU-Research Executive Agency (REA) for the evaluation of the individual proposals submitted within the work programme Marie Skłodowska-Curie (call H2020-MSCA-IF-2019).
- 2020 Member of the Chemistry Panel of the *Portuguese Fundação para a Ciência e a Tecnologia* (FCT) for the evaluation process of proposals in the programme “SR&TD Project Grants”.
- Appointed as expert by the EU-Research Executive Agency (REA) for the evaluation of the individual proposals submitted within the work programme Marie Skłodowska-Curie (call H2020-MSCA-IF-2020).

TEACHING ACTIVITIES

Since 1992 I have been teaching different courses of Inorganic Chemistry – including organometallic, bioinorganic, and supramolecular chemistry – to undergraduate, master and PhD students in Chemistry. In the last 2 years my teaching activity was the following:

- *Chimica inorganica con laboratorio*. Bachelor Degree in Chemistry (*Laurea Triennale in Chimica*, 7 out of 11 CFU, laboratory not included)
- *Chimica bioinorganica*. Master Degree in Chemistry (*Laurea Magistrale in Chimica*, 6 CFU).
- *Metalli in medicina*. Optional course for the students of Pharmacy and Chemical and Pharmaceutical Technology (2 CFU). This was formerly a course for the PhD students.

My yearly didactic evaluations from the students are of public domain (see <https://valmon.disia.unifi.it/sisvaldidat/units/>).

- Over the years, I introduced in the Master Degrees in Chemistry and Pharmacy the courses of *Supramolecular Chemistry*, *Bioinorganic Chemistry* and *Medicinal Inorganic Chemistry*.
- I was one of the three translators of the university textbook *Inorganic Chemistry* (5th edition, Oxford University Press), now edited in Italy by Zanichelli as “Chimica Inorganica”.
- I am currently engaged in the translation of a new edition of the university textbook *Inorganic Chemistry* (Weller et al., 7th edition, Oxford University Press), that will be edited in Italy by Zanichelli as “Chimica Inorganica”.

MENTORING ACTIVITIES

- B Sc students in Chemistry: > 20
- M Sc. students in Chemistry: > 35
- Ph D students in Chemistry: 5
 - Dr. Elisabetta Iengo (now Associate Professor of Inorganic Chemistry in my Department)
 - Dr. Barbara Serli (now employed in the US)
 - Dr. Massimo Casanova (now employed in The Netherlands)
 - Dr. Federica Battistin (now postdoc in Madrid)
 - Alessio Vidal (in progress)
- Postdoctoral fellows, national and international:
 - Dr. Martin Henn (from Germany, now employed in Germany)
 - Dr. Sarah Heath (from UK, now Associate Professor at the University of Manchester)
 - Dr. Elisabetta Iengo (see above)
 - Dr. Barbara Serli (see above)
 - Dr. Ioannis Bratsos (from Greece, 4 years, now at Demokritos Research Institute in Athens)
 - Dr. Stefanie Jedner (from Germany, 2 years, now employed in Austria)
 - Dr. Ana Rilak (from Serbia, now research associate at the University of Kragujevac)
- Over the years I hosted in my group several foreign Ph D students and postdoctoral fellows (weeks to months) in the context of COST and other international collaborations. An incomplete list follows:
 - Prof. Vadim Yu. Kukushkin (from Russia)
 - Dr. Aldrik Velders (from The Netherland, now full professor at the University of Wageningen, NL)
 - Dr. Iztok Turel (from Slovenia, now full professor of General Chemistry at the University of Ljubljana)
 - Dr. Anna Hotze (from The Netherlands, now at OctoPlus pharmaceutical company in Leiden, NL)
 - Dr. Darren Griffith (from Ireland, now research associate at the Royal College of Surgeons in Dublin).
 - Dr. Ioannis Bratsos (from Greece, see above)
 - Dr. Crystine Scolaro (from Switzerland)
 - Dr. Jakob Cljun (from Slovenia, now research associate at the University of Ljubljana)

PUBLIC-ORIENTED ACTIVITIES

For several years (at least 10) I gave conferences (2-4 per year) in high schools in the Friuli-Venezia Giulia region and was actively involved in the “Permanent Laboratory” initiative, in which classes from high schools were hosted into the teaching laboratories of the Department for performing chemical experiments. In October 2011 I was a speaker within the festival “ELEMENTA” organized by the *Immaginario Scientifico* in Pordenone, October 12-16 (see <http://www.immaginarioscientifico.it/2011/elementa>).

I was one of the organizer of the event “*La tavola periodica degli elementi*” that, together with the “*Tombola degli elementi*”, will take place within both “*Trieste Next 2019*” and “*La notte dei ricercatori 2019*”. In addition, I was one of the lecturers in the event “*Sistemi periodici: chimica e letteratura tra Mendeleev e Primo Levi*” within “*La notte dei ricercatori 2019*”.

In “*Trieste Next 2020*” I delivered the lecture “*Ciclo dell’azoto, chimica e agricoltura globale*”.

PUBLICATIONS AND METRICS

I am (co)author of **191 publications** (three issue covers), including several reviews (2 single-name) and 3 book chapters, and 10 patents (national and international), in the fields of coordination and organometallic chemistry, homogeneous catalysis, supramolecular chemistry, and anticancer metal compounds.

- *h* index: 57 (Scopus, November 2020)
- Publications in the last 5 years (2016-2020): 20
- total number of citations: 10592 (Scopus)
- number of citations in the last 5 years (2016-today): 2832 (Scopus)

I rank in position 34 among the Top Italian Scientists, Chemistry (with *h*-index = 62). The list (http://www.topitalianscientists.org/TIS_HTML/Top_Italian_Scientists_Chemistry.htm) includes the Italian scientist with *h*-index > 30 according to Google Scholar.

BOOKS AND SPECIAL ISSUES EDITED

- ‘Non-Covalent Multi-Porphyrin Assemblies’, E. Alessio ed., Vol 121 in the series *Structure and Bonding*, series editor D.M.P. Mingos, Springer-Verlag, Berlin, Germany, **2006** (ISBN-10 3-540-32542-5).
- *Bioinorganic Medicinal Chemistry*, E. Alessio ed., Wiley-VCH, Weinheim, Germany, **2011** (ISBN 978-3-527-32631-0) (see figure below).
- Co-editor (with Prof. Zijian Guo, Nanjing University, China) of the thematic issue on “Metal Anticancer Complexes – Activity, Mechanism of Action, Future Perspectives” published by the *European Journal of Inorganic Chemistry* (EurJIC) in 2017.

CONFERENCES, SEMINARS AND SYMPOSIA

In my career I gave ca. 90 lectures/seminars (ca. 45 in the last 10 years) at Universities, national and international Symposia (session-, keynote-, invited- and plenary-lectures), including an invited lecture tour in Germany (2011) at the Universities of Dortmund, Marburg, Bochum, Göttingen and Münster and one (2015) at University in Hong Kong and Macau (China). In 2012 I was invited to organize a session on metal anticancer compounds within the Gordon Research Conference ‘Metals in Medicine’. The full list is reported in a separate file, together with the publications and patents.

MAIN RESEARCH LINES

My main contributions to research are in the field of coordination and organometallic chemistry and concern supramolecular inorganic chemistry (in particular the preparation of multi-porphyrin assemblies for artificial photosynthesis), the development of anticancer metal compounds, and the

development of “well-behaved” metal precursors (in particular of Ru and Re) for the preparation of tailor-made derivatives.

In the field of anticancer metal compounds I developed the Ru(III) complex known as NAMI-A, which was (and still is) the first Ru compound to be investigated on humans in a phase II clinical investigation, of which I was the official sponsor.