

CV OF DR. CÉSAR SEQUEIRA

CÉSAR AUGUSTO CORREIA DE SEQUEIRA

(Retired Prof. Chemical Engineering, Chem Eng.
(Dip), MOE, PhD, DIC, FICorr, FIMMM, C Eng.,
FRSC, Emeritus Member ECS)



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Birthdate & Place: April 9, 1943, Peso da Régua, Portugal.

Marital Status: He was married to Maria Elisa dos Santos Galante, and they had 4 children, Jorge (b.1969), César (b. 1974), Rita (b. 1978), Catarina (b. 1985). He has also 4 grandchildren. His wife died in 2013.

Short Bio

César Augusto Correia de Sequeira was born in Peso da Régua, Portugal, in 1943. On graduation in Chemical Engineering from the Technical University of Lisbon in 1968 (7-year course) he was invited to join the staff of Instituto Superior Técnico as Lecturer (“assistente”). One year later he was invited to serve as Reader (“regente”) of Electrochemistry, Electrometallurgy and Electrothermy (one year course), for the 6th year students of chemical and electrotechnical engineering. In 1971 he started high temperature chemistry research in the Nuffield Research Group at Imperial College, obtaining a DIC (Diploma of Imperial College) in 1972 and a PhD from London University in October 1974. In the same year he returned to Lisbon and joined the University teaching staff, where he has been teaching and supervising research (at undergraduate, MSc and PhD levels) for more than 50 years. In 1976, jointly with the Dean of the University of Lisbon, he established the CECUL (Centre of Electrochemistry and Kinetics of the University of Lisbon). He spent one year (1982) with the Materials Development Division of the Atomic Research Establishment (Harwell, U.K.), where he performed a fruitful research work on the development of all solid-state polymer-based lithium cells. He spent another year (1985-86) at the University of Utah, where he joined the research group of Prof. J. Janata on ion selective field effect transistors. He was also Invited Professor at UMIST (UK), Univ. of Reading (UK), Univ. of Iserlohn (Germany), and Univ. of Arizona (USA). He has directed several international projects

on electrochemistry of hot corrosion, microbial corrosion, metal extraction, conducting polymers, energy storage and conversion. Most of these projects were financed by the European Union. He is author/co-author of over 270 technical papers and 239 conference proceedings, editor/co-editor of 15 books and author of a recent book, author/co-author of 24 book chapters, a frequent lecturer or panelist at scientific meetings, and is a member of several renowned international societies, being a Fellow of the Institute of Materials, Minerals and Mining, IOM3, U.K., a Fellow of the Royal Society of Chemistry (U.K.), and Active Member (now Emeritus Member) of the Electrochemical Society (U.S.A.). He is also serving as a reviewer for many scientific Journals. He has also acted as a consultant for several medium-sized companies. Recently, he left CeFEMA (Center of Physics and Engineering of Advanced Materials), where he was coordinating the Materials Electrochemistry Group (MEG-IST, University of Lisbon).

Education

<u>Dates</u>	<u>Institution</u>	<u>Degree</u>
4/71 - 10/74	Imperial College of Science, Technology & Medicine, London, U.K	Ph.D., DIC
9/70 - 3/71	Sir John Cass College, London, U.K.	Cert.
2/70 - 5/70	ENSIEE, Univ. of Grenoble, France	Cert.
7/69 - 10/69	Cebelcor, Free Univ. Brussels, Belgium	Cert.
10/61 - 9/68	Instituto Superior Técnico, Portugal	Chem Eng. (Dip.)

Professional Experience

9/17 – Present Research Leader, MEG, CeFEMA, IST, Lisbon

6/13 –9/17 Research Leader, MEG, ICEMS, IST, Lisbon
(Volunteer Work)

5/13 –Present Retired Professor

10/08 – 4/13 Professor in Materials Science, IST, Lisbon

2/02 –9/08 Professor in “General Chemistry”, IST, Lisbon

6/99 Director, Fourth International European Federation of Corrosion
Workshop on Microbial Corrosion

- 5/97 Director, Third European Workshop on Chemistry, Energy and the Environment.
- 8/96 Organising Committee Member, NATO ASI on Mineral Processing and the Environment.
- 5/95 Director, Topical Seminar on Modern Applications of Polymeric Materials.
- 3/95 Director, Second European East West Workshop on Chemistry and Energy.
- 3/94 Director, Third European Federation of Corrosion Workshop on Microbial Corrosion.
- 4/93 - 3/96 Honorary Lecturer at UMIST and in the University of Manchester, U.K.
- 3/93 Director, European Workshop on Electrochemical Technology of Molten Salts
- 9/92 - 3/93 Director, Action of Professional Formation on "Industrial Electrolysis" (700 hour course)
- 5/92 - 1/93 Director, Action of Professional Formation on "Electrochemistry of Materials" (700 hour course)
- 4/92 Director, NATO ASI on Multifunctional Mesoporous Inorganic Solids
- 3/91 Director, Second European Federation of Corrosion Workshop on Microbial Corrosion
- 2/91 - 10/91 Director, Action of Professional Formation on "Industrial Electrolysis" (700 hour course)
- 3/90 Director, First European East-West Workshop on Chemistry and Energy.
- 5/89 - 12/89 Director, Action of Professional Formation on "Electrolysis and its Industrial Applications" (400 hour course)
- 9/88 - 12/88 Director, Action of Professional Formation on "Industrial Electrolysis" (400 hour course)
- 3/88 Director, First European Federation of Corrosion Workshop on

Microbial Corrosion.

- 10/86 – 1/03 Associate Professor in “Electrochemical Processes” and “Materials and Corrosion”, IST, Lisbon.
- 11/86 - 9/86 Visiting Professor, Univ. of Utah, U.S.A.
- 2/85 Director, First Portuguese Workshop on Electrochemical Science and Engineering.
- 9/84 Director, NATO ASI on “Solid State Batteries”.
- 1/83 - 12/84 Vice-President of the Scientific Committee of IST (College of Engineering of the Technical University of Lisbon).
- 10/81-9/82 Research Associate, Materials Development Division, AERE-Harwell, Oxfordshire, U.K.
- 11/79-10/85 Associate Professor in Electrochemistry and Corrosion, IST, Lisbon.
- 1/76-4/80 Research Supervisor, Electrochemical and Kinetics Centre of the Lisbon University (CECUL), Lisbon.
- 1/75-10/79 Assistant Professor in Electrochemistry, Applied Electrochemistry and Corrosion, IST, Lisbon.
- 9/70 - 3/71 NATO Postgraduate Research Fellow, Sir John Cass College, London.
- 10/68 - 8/70 Lecturer in Electrochemistry, Electrometallurgy and Electrothermy, Laboratory of Electrochemistry, Department of Chemical Engineering, IST, Lisbon.

Research Projects

He has collaborated in several national and international projects on electrochemistry and related subjects.

National

Some of the national projects in which he participated as coordinator and collaborator, are:

- 2002-2006 Laser Controlled Collisional Processes 135000€
- 2005-2008 Recycling of Spent Domestic-Type Batteries 50760 €

- 2007-2010 Ionization of Laser Selected Vibrationally Excited Fullerenes 198000€
- 2007-2010 Hydrogen Storage in Nanostructured Materials 187198€
- 2012-2013 Functional Materials for Electrolytic Hydrogen Production 90000€
- 2013-2014 Transition Metal Oxide-Based Electrode Materials for Lithium-Ion Batteries 100000€
- 2016-2019 Fabrication and Functionalization of Nanostructured Metallic Foams for Energy Storage Applications 200000€
- 2017-2020 InPaCTus- Products and New Technologies for by-Product Recovery in Eucalyptus Pulp and Paper Industry 190000€

These projects were financed by FCT (Foundation for Science and Technology, Lisbon).

International

In 1976/77 he directed a joint project Portugal-England on Electrochemistry of Hot Corrosion.

In 1988-1996 he participated in 5 UE projects, Human Capital and Mobility, Erasmus, Tempus, Joule and Brite-Euram. He was the Portuguese leader of these projects. Two of these projects involved large financemnt (over 500000€):
 --1988-1992 Brite-Euram “New Types of Corrosion Impairing the Reliability of Copper in Potable Water Caused by Microorganisms”.
 --1991-1994 Joule “Study of the Corrosion and Scaling in Geothermal Systems”. The highest financemnt of all the projects was for the Brite (1000000€).

Main Research Interests

General

Basic & applied aspects on the teaching of Modern Electrochemistry; Corrosion & protection of materials; Electrochemical energy devices.

Specific

Electron transfer processes; Electrochemical synthesis; Electrocatalysis; High temperature corrosion; Solid state ionics; Solid state batteries; Molten salts & ionic liquids; Water electrolysis; Hydrogen production & storage; Liquid electrolyte fuel cells; Gas bubbling.

Scientific Consulting

- He was Editor-in- chief of “Ciência & Tecnologia dos Materiais” (official Journal

of the Portuguese Materials Society, SPM), from 1993 to 2014;

- He was member of the Editorial Boards of “Journal of Power Sources” (1989 – 1998), and “Journal of Corrosion and Protection of Materials” (1983-2018);

- He was also a member of the Editorial Boards of “Molten Salt Forum”, “Environmental Research Forum”, and “Moscow International Energy Club’s Newsletter”;

- From 2019 to present he is an Editorial Board Member in the MDPI (Basel, Switzerland) journals “Molecules”, “Oxygen”, “Materials”, “Membranes”, “Energies”, “Reactions”, “Nanomaterials” and “Encyclopedia”;

- From 2019 to present he has served as Guest Editor of 6 MDPI Special Issues (Membrane separators for batteries and fuel cells, Pd-based nanoalloys for electrochemical reactions, Latest progress for proton-exchange membrane fuel cells, Nanoalloy electrocatalysts for electrochemical devices, Exclusive papers of the Editorial Board Members (EBMs) of the Electrochemical Section of Molecules, and Electrochemical Oxygen Sensors). He has also served as Guest Editor of an open-access article collection on "Water Electrolysis" for the journal “Frontiers in Energy Research”.

- In 1969/1970, he has published a Notebook (in Portuguese) to serve as textbook for his lectures on Electrochemistry, Electrometallurgy and Electrothermy (365 pages). These notes have been used in IST for about 20 years, for undergraduate students of chemical engineering, materials engineering, and electrotechnical engineering.

- During his stay at Imperial College he translated texts from Russian into English for the IUPAC Periodical “Bibliography on the High Temperature Chemistry and Physics of Materials”, under the chairmanship of Professor CB Alcock, Toronto, Canada.

- Apart from supervising over 10 PhD students, he has been asked to examine PhD Thesis in Portugal, in France, and in India.

- In 1989 he co-published a Portuguese translation of the French book “Leçons en Corrosion Electrochimique”, by M. Pourbaix, Cebelcor, Brussels, 1975. The translated version, “Lições de Corrosão Electroquímica”, and its revision was coordinated by M. Elisabete Almeida, Editorial LNETI, Lisboa.

- Between 1998 and 2003 he has authored over 150 short articles for the Verbo Encyclopedia Luso-Brasileira de Cultura (Século XXI), 29 vols.

- He has acted as reviewer of many scientific journals, namely Catalysts, ChemElectroChem, Desalination and Water Treatment, Electrochemistry Communications, Electrochimica Acta, Energy, Energy & Fuels, Energy Conversion and Management, Frontiers in Energy Research, International Journal of Hydrogen Energy, Ionics, Solid State Ionics, Journal of Applied Electrochemical Chemistry, Journal of Solid State Electrochemistry, Journal of the Electrochemical Society, Journal of Alloys and Compounds, Journal of Electroanalytical Chemistry, Journal of Power Sources, Materials, Materials Chemistry and Physics, Russian Journal of Electrochemistry, Energies, Nanomaterials, Coatings, Corrosion Science, Corrosion, Materials and

Corrosion, International Journal of Materials Research, Electrocatalysis, Oxygen, Hydrogen, Electrochemical Acta, Chemical Communications, Sustainability, etc.

- He has served as Research & Development Advisor for the European Office of Materials Research & Development Co. (USA);
- He is cited in International Who's Who of Intellectuals, vol. 6, IBC Cambridge, 1985, and in the Verbo Encyclopedia, Vol. 27, 2002.
- In December 2020, he was elected among the 5 winners of Encyclopedia Outstanding Contribution Awards 2020.
- For 2020/2022 he has appeared in Stanford University's World's Top 2% Scientists list.

Membership in Societies

International Society for Solid State Ionics 1986-1993

Institute of Corrosion (U.K.) Fellow 1983-1990

International Society of Electrochemistry. 1980-1990

Portuguese Chemical Society 1986-Present

Society of Chemical Industry (U.K.) 1983-1990

Royal Society of Chemistry (U.K.), Member: 1987-2017
Fellow : 2018-Present

European Federation of Corrosion - Member of 2 Working Parties and National Delegate of the Portuguese Chemical Society. 1980- Present

Portuguese Society for Agrarian Sciences. 1980-Present

Portuguese Electrochemical Society, Founder Member & M: 1983-Present

Portuguese Materials Society, Founder Member and Secretary of the Division on Electrochemistry of Materials. Member of the Directive Council, in 2002-2015

British Engineering Council - Chartered Engineer 1986-Present

Electrochemical Society, USA, Member: 1983-2018
Emeritus Member: 2018-Present

Surface Engineering Society (U.K.): 1986 -1990

International Association of Science and Technology for Development -
Member Tech. Com. on Energy: 1990-1996

Institute of Materials, Minerals & Mining (UK), Member: 1980-1989
Fellow : 1990-Present
Portuguese Engineering Council, Member: 1970-1995
Senior Member: 1996-Present

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César Augusto Correia de Sequeira