DR. CARLOS EDUARDO FRONTANA VÁZQUEZ

RESUMED CV

September, 2016

CURRENT FACULTY POSITION: **TITULAR RESEARCHER B; DEPUTY DIRECTOR IN ELECTROCHEMISTRY, MATERIALS AND SENSORS**

INSTITUTION:
CENTRO DE INVESTIGACIÓN Y DESARROLLO TECNOLÓGICO EN ELECTROQUÍMICA. PARQUE TECNOLÓGICO QUERÉTARO SANFANDILA. PEDRO ESCOBEDO 76703 TEL. 52 442 211 60 00 EXT. 7849 FAX 52 442 211 6001.

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- B. IN SC. CHEMISTRY. FACULTY OF CHEMISTRY, UNIVERSIDAD NACIONAL AUTÓNOMA DE MEXICO. MÉXICO, D.F. 2001
- DOCTOR IN SCIENCES (CHEMISTRY), UNIVERSIDAD AUTÓNOMA METROPOLITANA - UNIDAD IZTAPALAPA, MEXICO, D. F. 2006.
- MEMBER OF THE NATIONAL RESEARCHERS SYSTEM, MEXICO, LEVEL 2 (OUT OF 3) (2008-2018)
- POSTDOCTORATE STUDIES, CENTRO DE INVESTIGACIÓN Y DE ESTUDIOS AVANZADOS DEL INSTITUTO POLITÉCNICO NACIONAL, MEXICO, (2006 - 2008)

EXPERIENCE AND RESEARCH INTERESTS

Currently, my research is focused in the following areas: Molecular Electrochemistry (reaction mechanisms for electrochemically activated molecules); In-situ Spectroelectrochemistry employing Ultraviolet – Visible Spectroscopy and Electron Spin Resonance; Analysis of Weak Interactions between Electrogenerated Intermediates (hydrogen bonding, π–π stacking); Bioelectrocatalysis; Analytical Chemistry in the analysis of Antioxidants in pure form and present in extracts of natural products; Natural Product Chemistry..

- **40 publications in peer-reviewed journals indexed in the Journal Scitation Reports, 178 Citations by non-related authors, h-index: 11)**
- **25 Courses at the Graduate and Postgraduate Level (Ionics, Non-aqueous solvents, Electrochemical Techniques, Organic Electrochemistry, Scientific Writing in English)**
- **12 Thesis Directed (7 B. in Sc., 3 Ms. In Sc., 2 Ph. D.)**
- **Peer Reviewer for many peer reviewed journals including Electrochimica Acta, Journal of Organic Chemistry, Journal of the American Chemical Society, Nanoscale, RSC Advances, etc.**
- **11 Invited Keynote Lectures**
- **Regional Representative for Mexico at the International Society of Electrochemistry, 2012-2014 and 2015-1017 (Currently serving a second term).**
- **Vice-chair of Division 6, Molecular Electrochemistry, International Society of Electrochemistry, 2013-2015 and 2015-2017.**
- **Member of the Electrochemical Society**
- **Member of the International Society of Electrochemistry**

Organizer of Scientific Events

1. Coordinator of the Organizing Committee of **New Processes and Materials Based on Electrochemical Concepts at the Microscopic Level (MicroEchem 2013)**, ISE Sponsored Satellite Meeting, La Muralla, Amealco de Bonfil, Queretaro, September 16 – 19, 2013.
2. Coordinator of Symposium 11, "*Molecular Electrochemistry of Novel Organic and Coordination Compounds, Electrosynthesis and Electrocatalysis*", for the **64th Annual Meeting of the International Society of Electrochemistry**, Santiago de Queretaro, Mexico,September 8 – 13, 2013.
3. Member of the Organizing Committee of the **15th Topical Meeting of the International Society of Electrochemistry**, Niagara Falls, Canada, April 27 – 30, 2014.
4. Coordinator of the Organizing Committee of the **First Summer School in Molecular Electrochemistry**, **(MicroEchem 2014)**, ISE Sponsored Satellite Meeting, La Venta, San Juan del Río, Queretaro, June 29-July 2, 2014.
5. Coordinator of the Organizing Committee of the **Second Summer School in Molecular Electrochemistry**, **(MicroEchem 2014)**, ISE Sponsored Satellite Meeting, La Muralla, Amealco de Bonfil, Queretaro, June 29-July 2, 2015.
6. Coordinator of Symposium 15, "*New Molecules – Synthesis, Fundamental Electron Transfer Properties and their Relationship with Molecular Action*", for the **67th Annual Meeting of the International Society of Electrochemistry**, Den Haag, Netherlands, August 21-26, 2016.

Editor and Guest Editor Experience

1. **Guest Editor for the Special Issue of Electrochimica Acta "ELECTROCHEMISTRY FOR A NEW ERA: Selection of Papers from the 64th Annual Meeting of the International Society of Electrochemistry 8-13 September, 2013, Santiago de Queretaro, Mexico"**. Volume 140, September 10th, 2014, ISSN 0013-4686. Elsevier

2. **Guest Editor Procedia Chemistry**. "New Processes and Materials Based on Electrochemical Concepts at the Microscopic Level", Volume 12, 2014, ISSN 1876-6196. Elsevier.

3. **Guest Editor for the Special Issue of Electrochimica Acta "Green Electrochemistry for a Tomorrow´s Society: Selection of Papers from the 66th Annual Meeting of the International Society of Electrochemistry, 4-9 October, 2015"**. Tentative publication date: June 2016. Elsevier

4. **Guest Editor for the Special Issue of the Journal of the Mexican Chemical Society "MicroEchem 2015-Second Summer School in Molecular Electrochemistry, June 29th - July 2nd, 2015"**. Publication date: May 2016, Sociedad Química de México. ISSN 1870- 249X

5. **Guest Editor for the Special Issue of Electrochimica Acta for the event "MicroEchem 2016 – Electrochemical Energy Storage Discussions, ISE Sponsored Event, November 6th to 9th, 2016"**. Tentative Publication Date: April-June 2017. Elsevier

Program for Development of Division 6 "Molecular Electrochemistry"

DR. CARLOS EDUARDO FRONTANA VÁZQUEZ

My main research interests are fundamental molecular electrochemistry, dealing with the study of electron transfer mechanisms in organic, inorganic and supramolecular systems, characterizing the electrogenerated intermediates by spectroelectrochemical methods. Also, in my work group we have extensively implemented site-specific descriptors based on DFT methods for studying ET processes and predicting the reaction sites in consecutive electron transfers. We have employed these methods to study a wide variety of systems, from simple molecular-structure activity relationships, electron transfer controlled hydrogen bonding, stability of reactive intermediates for electrogenerated chemiluminiscence, development of electrochemical analysis of antioxidants and characterization of microstructures within functional redox polymers for organic radical batteries.

I have organized the ISE-sponsored "MicroEchem" meetings, which are devoted to discuss overlapping aspects of molecular electrochemistry with applications in electrochemical energy storage, supramolecular chemistry, bioelectrochemistry and industrial scaling-up. From 2013 to 2016, these meetings have attracted the interest of fellow colleagues from Mexico and abroad. Also, I have participated as coordinator and/or coorganizer in symposia at the ISE 2013 – 2016 meetings, as well as being part of the organizing committee of the 2014 ISE Topical Meeting in Niagara Falls. As part of the Society, I have served as Regional Representative for Mexico during the period 2012-2014 and 2015-2017 (second term) and also worked as vicechair of Division 6. Besides, I have fulfilled guest editor duties for Electrochimica Acta and Procedia Chemistry, edited by Elsevier, the Journal of the Mexican Chemical Society and have worked as , and I am currently member of the Editorial Board of the Polish Journal of Environmental Studies.

My work as Chair of Division 6 "Molecular Electrochemistry" would be based in the following agenda:

1) **Promote the emphasis of basic and fundamental electrochemistry as a key factor to improve the development of other areas and specialties in Electrochemistry. In particular, I find important and consistent activities in the areas of Bioelectrochemistry, Electrochemiluminescence, Industrial Electrochemistry and Electrochemical Energy Storage. Collaborative events between these areas will certainly improve the quality and reach of research projects. Such events must include workshops to improve the knowledge in electrochemical science and technology.**
2) **Such events must be take place in at least each three-month period in a calendar year and so, I propose a new instrument to promote and organize Divisional Sponsored Events with such periodicity considering four key regions: Latin and North America, Asia-Oceania, Europe and Africa.**
3) **Promoting the creation of one Divisional Student Section in the regions above presented, which would organize students meetings so they can have contact with scientists within our division.**
4) **Develop a program to involve our division in at least one ISE Topical Meeting every two years, in collaboration with interested Scientific Divisions of the ISE.**