Curriculum vitae Neso SOJIC

Date of Birth: 24 September 1970. Place of Birth: Paris, France.

Nationality: French. Marital Status: Married.

Work Address:

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Current Position:

Professor of Chemistry
Group Analytical Nanosystems
Institut des Sciences Moléculaires Université de Bordeaux
Institut Polytechnique de Bordeaux ENSCBP

Teaching positions: Teaching assistant (1995 - 1997)
(Université Pierre et Marie Curie Paris VI)
Assistant Professor (1998 - 2006)
(Ecole Nationale Supérieure de Chimie et de Physique de Bordeaux)
Full Professor (2006 -)
(ENSCBP, Université de Bordeaux)

Education/Experiences:

1997 PhD - Ecole Normale Supérieure Université Pierre et Marie Curie/ Paris VI
1998 Post-doct Department of Chemistry, University of Texas at Dallas.
2004 Habilitation at the University of Bordeaux *(Spectroelectrochemistry and nano-imaging)*

HONORS:

1998 Robert A. Welch Foundation Fellow.
2005 French Chemical Society - Analytical Chemistry Division Medal.

2010 Invited visiting Professor University of Venice, Italy
2010 Guest Professor Max Planck Institute of Colloids and Interfaces, Potsdam, Germany
2011 Distinguished Lecturer at the University of Belgrade, Serbia
2011 Distinguished Lecturer at the University of Southampton, UK
2012 Invited visiting Professor University of East Anglia, UK
2012 Guest Professor University of Siegen, Germany
2013 Guest Professor University of Giessen, Germany
2015 Guest Professor University of Bologna, Italy
2015 Invited visiting Professor Cyril and Methodius University, Macedonia
2016 Guest editor with F. Paolucci, G. Xu and H. Cui of a special issue of the journal *Analytical and Bioanalytical Chemistry*. Topic: Analytical electrochemiluminescence.
2017 Guest editor special issue on Nanoelectrochemistry in the journal *Current Opinion in Electrochemistry*
2018 Chinese Academy of Science President's International Fellowship

Membership of Learned Societies:

Société Chimique de France (SCF)
International Society of Electrochemistry (ISE)
French Bioelectrochemistry Group (GFB)

Other Activities

2009-12 Regional representative of the French Chemical Society for the Région Aquitaine

2009-12 Administrative Council of the French Chemical Society

(Co)organizer of several conferences related to electrochemistry (*ElecNano, ESEAC, ISE,*).

Chairman of the conferences: E

Member of the permanent steering committee of the *Europtrode* series conference

Current research interests include: - Analytical electrochemistry - Electrogenerated chemiluminescence Bioelectrochemistry Spectroelectrochemistry - Optical fiber sensors.

Electrochemiluminescence microscopy: from bead-based immunoassays to cell imaging

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Electrogenerated chemiluminescence (ECL) is the process of light emission by the excited state of a luminophore upon electrochemical stimulation. To increase the sensitivity and the multiplexing performances of ECL, many efforts have been focused on the development of novel analytical strategies and original imaging applications. In this seminar, we will present a few recent works on biosensing and cell microscopy which exploit the remarkable characteristics of ECL based on the reactivity of the coreactant.

Bead-based ECL assays have been the object of numerous works and they are currently commercialized for more than 150 immunoassays, such as cardiac and infectious diseases, thyroid, tumour markers, *etc*. However, there is still a lack of understanding of the extremely high sensitivity of the bioassays using ECL as a readout method. In a first part, we will present an ECL imaging approach resolved at the single bead level. It provides a general description of the ECL phenomena operating in bead-based ECL bioassays and reactivity mapping demonstrates the mechanistic route which leads to ECL emission. Deciphering progressively the mechanistic route has allowed us to propose the design of novel immunosensing strategies using gold nanoelectrode ensembles.

In a second part, the development of coreactant-based ECL as a surface-confined microscopy to image single cells and their membrane proteins will be presented. Labeling the entire cell membrane allows to demonstrate that, by contrast with fluorescence, ECL emission is only detected from fluorophores located in the immediate vicinity of the electrode surface. Then, to present the potential diagnostic applications of our approach, we selected carbon nanotubes (CNT)-based inkjet-printed disposable electrodes for the direct ECL imaging of a labeled plasma receptor overexpressed on tumor cells.