



Professor Vincent Ball

Université de Strasbourg and Unité Mixte de Recherche,
Strasbourg, France

Eumelanin films and particles: structural investigation, simulations and applications

ABSTRACT

Melanins, such as the black brown eumelanin and the redish pheomelanin, are ubiquitous and multifunctional pigments among living organisms. They may present interesting applications in bioelectronics and for biomedical applications but to reach improved properties, a more fundamental knowledge of their self assembly, from oxidized catecholamines, is mandatory. In this presentation the results of molecular dynamics simulations allowing to describe the structure of eumelanin from the self assembly of the most stable tetramer of 5, 6 hydroxyindole will be presented (issued from a collaboration with Prof. Markus Buehler, MIT). This *in silico* eumelanin has structural mechanical and optical properties in excellent agreement with dopamine-melanin. High resolution TEM also revealed the presence of graphite like domains, a knowledge we are now intensively exploiting for a better control of electrical conductivity of eumelanin. In addition I will show that a templated synthesis of eumelanin in the presence of surfactants or proteins allows to produce pretty monodispersed nanoparticles. Finally, the deposition mechanism of eumelanin films on solid surfaces as well as some properties and applications of those films will be presented.

BIO

- 2007** Fulbright fellowship: Invited researcher at the Michigan University, Ann Arbor, Department of Materials Sciences, Chemical and Biomedical Engineering
- 2005** Full Professor at Université Louis Pasteur, Strasbourg, France
- 2004** Invited researcher at the Max-Planck-Institut für Polymerforschung, Mainz, Germany
- 2001** Habilitation to supervise PhD students
- 1997** Assistant Professor, Faculty of Chemistry, Université Louis Pasteur, Strasbourg, France
- 1996-1997** Postdoc in Biophysics, Biozentrum, University of Basel, Switzerland
- 1993-1996** PhD thesis at Université Louis Pasteur, Strasbourg, France
- 1993** Diplôme d'études approfondies (DEA) in Physical Chemistry
- 1992** Master in Physical Chemistry
- 1990** BSC in Physics

March 20, 2014, 3 pm

Leibniz Institute of Polymer Research, Max Bergmann Center of Biomaterials
Seminar Room B1, Ground floor, Budapester Straße 27

Contact: Prof. Carsten Werner, IPF/Max Bergmann Center of Biomaterials Dresden