Soutenance

ibs
Institut de Biologie Structurale

HDR

Vendredi 28 Juin 2019 à 13h30

Salle des séminaires

Institut de biologie structurale - 71 avenue des Martyrs CS 10090 38044 Grenoble Cedex 9 - T.+33 (0)4 57 42 85 00

www.ibs.fr

par **Wai Li Ling**

Institut de Biologie Structurale

Groupe Microscopie Electronique et Méthodes

Interdisciplinary Studies of Nanoparticles and Nanocrystals by Electron Microscopies

Habilitation à Diriger des Recherches

The presentation summarizes my major research activities in material science and later also in life science since I obtained my PhD and outlines the projects that I plan to work on. After my PhD at the University of California at Berkeley on thin film magnetism, I did my first postdoctoral fellowship at the Sandia National Laboratories to understand the growth of ultrathin films using scanning tunneling microscopy. We also used low energy electron microscopy to visualize dynamics in ultrathin films. After Sandia and over ten years in material science, I joined the collaboration between Prof. J. Sedat and Prof. D. Agard in the University of California at San Francisco medical school to work on cryo-electron tomography of vitreous sections. Arriving in Grenoble, I study nanoparticles as well as protein samples using (scanning) transmission electron microscopy. Some of these projects will be presented. I will also present the collaboration with IRPAS on the potential health effects of industrial nanoparticles. The second part of my presentation covers my current and future research projects. Since my arrival at the IBS, I have been working on protein electron diffraction intermittently. Earlier work with precession electron diffraction was interrupted for various reasons. The project has regained momentum with recent technological progress. Another aspect of my project involves the characterization of new functional nanocrystals fabricated at the CEA. These nanoparticles have sizes in the nanometer range and often contains organic components, which make them very sensitive to radiation damage. Electron microscopy techniques typical in materials science, intended for samples resistant to radiation damage, are not suitable for these new nanoparticles. We are thus adapting techniques borrowed from life science to characterize these novel nanoparticles. The last project covered in this presentation involves the protein C1q, a multifunctional protein with a prominent role in immunity. Despite its importance, its structure and functional mechanism is little understood because of its flexibility. A strategy to undertake this problem will be described. Preliminary work as well as future plans of all the projects will be presented.

L'accès au campus EPN nécessite un avis de rendez-vous
Contactez O. Cavoret (au moins 48h à l'avance) - T. 04 57 42 87 04 - email : ibs.seminaires@ibs.fr