



The supervisory board of the Kestcells Project announces the Seminar AMU-02:

“Spectroscopic Ellipsometry: applications for thin film solar cells”

Dates: 14th of March, 2014.

Place: AMU, Domaine Universitaire de Saint Jérôme Case 231 - 13397, Marseille, France

Program

| Time | Subject | Speaker |
|---------------|---|----------------------------|
| 09:30 – 11:00 | From Introduction to Advanced Spectroscopic Ellipsometry. Examples and Applications in R&D and Industry. | Christophe DEFRANOUX |
| 11:00 – 11:45 | Ellipsometry and roughness : a practical approach | Antonin MOREAU |
| 11:45 – 12:30 | Optical transitions of π -conjugated organic materials for solar cells determined by Spectroscopic Ellipsometry | Fatima BENCHEIKH ABOURA |

Summary

**From Introduction to Advanced Spectroscopic Ellipsometry.
Examples and Applications in R&D and Industry**

Christophe DEFRANOUX

Since the first commercial Spectroscopic Ellipsometer, installed in 1985 in Japan, the SE technique is measuring 1000 times faster, on a 20 000 times smaller spot size, 8 times more parameters on much more complex layers, structures and substrates. We will review the main technical progress throughout these 30 years.

Ellipsometry and roughness : a practical approach

Antonin MOREAU

Ellipsometry is often presented as the most powerful technique to determine the intrinsic optical parameters of thin films: refraction index n and extinction coefficient k . On the other hand, obtaining those parameters is not straightforward when surface roughness is present, which is a very common issue.

This presentation will deal with the ellipsometry technique from the practical approach. From this standpoint, we will first determine what the limit of roughness that ellipsometry can handle and in the second part, we will see the possibility to overcome in some cases the roughness issue in order to obtain accurate ellipsometric measurements, showing as an example the case of CIGS thin film absorber.

Optical transitions of π -conjugated organic materials for solar cells determined by Spectroscopic Ellipsometry

Fatima BENCHEIKH ABOURA

In this presentation, we study the optical properties of the polymers and the fullerene derivatives by Spectroscopic Ellipsometry measurements and modeling. We show that it is possible to determine optical transitions of this π -conjugated molecules. For this purpose, we use variable angles spectroscopic Ellipsometry Measurements.

The films were prepared by spin coating on glass substrates. Understanding the optical properties of the polymers and the fullerene derivatives and following the evolution of the optical transitions enable us to understand the change in the optical properties of organic donor semiconductors and their blends with different acceptors. Therefore we can access to information about the crystallization and the nano-morphology of the resulting films.

