



The supervisory board of the Kestcells Project announces the Seminar AMU-07:

“Synthesis of kesterites nanoparticles by ball milling for processing thin films to be used in solar cells”

Dates: 11th of February, 2016.

Place: AMU, IM2NP – Campus de St Jérôme, Marseille, France

Program

Time	Subject	Speaker
10:30 – 12:00	Synthesis of kesterites nanoparticles by ball milling for processing thin films to be used in solar cells.	Prof. Dr. Osvaldo Vigil
Institute Polytechnique National (IPN), Mexico City, Mexique		

Summary

The Kesterites semiconductor compounds have attracted great attention and interest as a promising absorber material in thin film solar cells, due to its low cost, little toxicity, p-type conduction, suitable direct band gap and high photon absorption in visible light range. Various techniques have been developed in synthesizing the Kesterites, such as chemical solution synthesis, spray deposition, electron-beam evaporation, RF-magnetron sputtering. In these methods, either expensive vacuum technology or polluting chemicals are used in the processes.

Furthermore, the existing methods generally involve additional processing steps of annealing the samples, with the flowing of toxic gas H₂S and chemical etching with KCN in order to achieve synthesized compounds and eliminated secondary phases. By considering small scale laboratory fabrication of Kesterites, the employment of these methods does not appear to be a significant problem. However, two aspects must be taken into account for industrial applications: the total time of the solar cells production and the environmental contamination. Many of the difficulties outlined above can be overcome if relative low temperature direct syntheses of the compound with the appropriate composition are used. The ball milling method has these advantages and has been used from many years ago for fabricating building materials and now a wide range of materials are synthesized by this method. Therefore, for the synthesis of kesterite materials is an appropriate method, where no chemical solutions are used, no chemical waste is generated, and no expensive vacuum facilities are employed.

In the present talk are reported the preliminaries results about the synthesis of Kesterite powders by ball milling process.