

10 January 2019

PhD Thesis

Electrochemical synthesis of nanostructured films with low thermal conductivity for thermoelectric conversion

General information

Contract: 3-year appointment as PhD Student

Employer: IJL – University of Lorraine

Workplace: Metz, France

The position starts in October 2019

PhD description

Context: The Institute Jean Lamour (IJL) of the University of Lorraine (France) invites applications for a PhD position in materials Science. The PhD position will take place at the Institute Jean Lamour (IJL), in the research group 'Chemistry and Electrochemistry of Materials'. This work, under the supervision of A. Pr. N. Stein and Dr. S. Legeai, is a part of the innovations aimed at improving the energy efficiency of thermoelectric materials through their nanostructuring.

Your tasks: The PhD thesis is in continuity with the previous results of the group dedicated to the electrodeposition of self-standing 1D single crystalline nanowires in ionic liquid. The scientific objective is to study the influence of the chemical composition and the crystallinity of advanced 1D nanostructures on their transport properties.

The main tasks will concern:

- The extension of the past studies to the synthesis of 1D core-shell Te-based nanostructures;
- The exploration in the synthesis of 1D binary nanowires with high aspect ratio;
- The fabrication of hybrid films from conductive polymer and 1D Te-based nanostructures. This step will be realized in collaboration with the 'Institut Charles Sadron' (BRINKMANN Martin) (CNRS Unistra Strasbourg).

Keywords: electrodeposition, low dimensional materials, thermoelectricity.

Candidate profile:

Master degree in physics, material science, or physical-chemistry or a related field and enjoy practical work.

Knowledge of electrochemistry is essential and thermoelectricity is beneficial.

Knowledge of English (oral and written) is important and knowledge of French would be an advantage.

As an enthusiastic researcher you like team work, and have a flexible approach to collaborating between different laboratories.

How to apply:

We are looking forward to receiving your application including a motivation letter, CV, diploma copies.

Please send to S. LEGEAI: sophie.legeai@univ-lorraine.fr and N. STEIN: nicolas.stein@univ-lorraine.fr