

# Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website [www-csc.utt.fr](http://www-csc.utt.fr))

Supervisor's name :  Given names :

Status (prof., assistant prof., ...) :

Laboratory :  Website address :

Institution :  Website address :

Scientific competence of the supervisor:

Pierre-Jean COTTINET graduated from INSA Lyon in 2008, He received a PhD. Degree in Acoustics in 2010, at INSA Lyon with the support of French defense procurement agency. In 2011, he was a post-doctoral researcher at HPMI, Florida State University where he worked on the buckypaper characterization with US Air Force Funding. Currently, he is an associate professor at INSA Lyon, LGEF laboratory and his research interests are characterization of electroactive materials, mechatronics and 4D printing. He supervised 10 PhD students. HE co-authored 70 papers and 6 patents, and he is the PI for more than 1M€ of bilateral contracts with companies.

Two major publications in the field proposed for the PhD :

1.
2.

Website address of the personal page :

**Supervisor's email :**

**Description of the research work proposed for a PhD** **Topic # (see list) :**

Title :

Subject :

"Smart materials" refer to those materials which have the ability to change their composition or structure, their electrical and/or mechanical properties, or even their functions in response to some environmental. Generally, "smart" materials are implanted in systems whose integral properties can be favorably altered in order to respond to the performance needs. The interest researchers who were engaged in the subject of smart materials have been triggered by the plentiful examples of smart materials that were provided by nature. For example, the leaves of Mimosa pudica collapse suddenly when touched; leaflets of Codariocalyx motorius rotate under exposure to sunlight; sunflowers turn towards the sun. Major advantages of smart material actuators and sensors include high energy density, fast response, compact size, and fewer moving parts. Some disadvantages include limited strain outputs, limited blocking forces, high cost, and sensitivity to harsh environmental conditions. The nonlinear properties of these materials present one of the major hurdles for their application. They are more likely to be observed as hysteresis. The goal of the PhD concern the development of multifunctional composite using commonly polymer matrix by insertion of functional particles (conductive and ferroelectric), and understanding the nonlinear behavior (ie. Influence of mechanical excitation on the electric properties, etc.)

Keywords :

Expected collaborations :

Background required from the applicant :

We search PhD-Student with open mind, that able to work on different field (material, electrical, mechanical, applied physics).

Existence of a PDF file detailing the proposal ("yes" or "no") :

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