

Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website www-csc.utt.fr)

Supervisor's name : Given names :

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

Laboratory : Website address :
Institution : Website address :

Scientific competence of the supervisor:

Fabrice Bernard: atomistic/nanoscale simulation of crystalline materials, single-crystal characterization, thermal properties, and morphology, molecular dynamics and density functional theory. Raghavan : expertise spans topology optimization, machine learning, and multi-scale modeling. Raghavan, Cauvin and Bouvier have co-authored work on multi-scale investigation of anisotropy using crystal plasticity and inverse analysis (former PhD of Jin Jianqiang through CSC). Raghavan, Xiao, Breitenkopf, have co-authored landmark papers on topology optimization.

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 :

Classical Topology Optimization frameworks assume isotropic, homogeneous behavior (inadequate for metallic alloys in lightweight engineering, which are governed by crystal plasticity, grain orientation and texture evolution. Crystal plasticity methods capture anisotropic plastic behaviour but at a prohibitive computational cost. The PhD aims to develop the first computationally tractable framework for concurrent optimisation of structural topology and local crystallographic texture in anisotropic metallic components, exploiting machine learning to bring the crystal plasticity fidelity inside the optimisation loop.

Keywords :

Expected collaborations :

Background required from the applicant :

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

(see guidelines on the website www-csc.utt.fr)