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 :	Rija Nirina	Given names :	RAOELISON
Status (prof., assistant prof., …) :	Assistant prof. (habilitation to supervise research)		
Laboratory :	ICB-PMDM	Website address :	
Institution :	UTBM	Website address :	https://www.utbm.fr/

Scientific competence of the supervisor:

- Mechanical and material science
- Characterization of structures, phases and properties, modelling and computational analysis.
- Multiphysics modelling and simulation of thermal processes.

Two major publications in the field proposed for the PhD :

1. R.N. Raoelison et al., Modeling and numerical simulation of the resistance spot welding of zinc coated steel sheets using rounded tip electrode: Analysis of required conditions, App Math Modeling, 2014.
2. R.N. Raoelison et al., Interfacial kinematics and governing mechanisms under the influence of high strain rate impact conditions- Numerical computations of experimental observations, J. Mech Physics of Solids, 2016.

Website address of the personal page : https://icb.u-bourgogne.fr/equipe/rija-nirina-raoelison/

Supervisor's email : rija-nirina.raoelison@utbm.fr

Description of the research work proposed for a PhD ***Topic # (see list) :*** IV-6

Title : Predictive tool for the analysis of bonded joint and interfacial adhesion properties

Subject :

The interfaces within a bonded media are zones that play a major role for the mechanical performance of an assembly. The structure and properties of such zone are recognized to have a significant influence on the mechanical response. As a result, a suitable adhesion at an interface is required for an effective load distribution and stress transfer. In light of this, the aim of this work is to perform computational analysis based on experimental data focused on a discrete media. The mechanical behavior will be investigated along with sensitivity study depending on interfacial parameters and structures within the media. Particular attention is then focused on the description of the main mechanical law and modelling techniques capable for computing the interfacial properties. For that purpose, the works include an up-to-date review of some relevant models available in the literature and suitable for modelling a bonding strength under mechanical loading. At the outset, we expect to give a brief overview of the different correlations that can link the interface features to the mechanical response depending on the features of the discrete media. In the final outlook, we expect to highlight the key findings and discuss potential models for predicting adhesion properties and mechanical behaviours.

Keywords :

Interface, Behaviour, Modelling, Computational analysis

Expected collaborations :

Background required from the applicant :

Mechanics of materials, FEM modelling, Computational analysis, Mechanical engineering

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

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