

# 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:

The aim of this research group is develop methods and instrumentation for ultrasonic characterization of complex media.

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 :

Non-destructive monitoring of a material's state during its physico-chemical transformation is of interest for several industrial fields including food processing and industrial manufactures. Recent research trends have indeed focused on the monitoring of elastic properties (Young's modulus, shear modulus) of these sol-gel products. The use of ultrasound to provide reliable information about physico-chemical properties is becoming increasingly popular. Indeed, ultrasonic techniques have the main advantage of being rapid and non-invasive methods that allow parameters such as product composition, structure and physical state to be obtained. Yet, classical techniques are limited to the characterization of the medium along the propagation path using the first wave packets. Here, we propose an alternative technique based on studying the reverberated signals, classically used in room acoustics. These complex signals contain useful quantitative and qualitative information about medium properties and are sensitive to structural changes. The goal of this Phd Thesis is the characterization of sol gel transition using the reverberation method. For that, an adaptation of existing analytical models has to be done by the future student in order to predict the reverberation time for a 2-layered medium. This model will be verified using numerical methods and experiments. Then, the variation of the reverberation time during the sol gel transition will be studied.

Keywords :

Expected collaborations :

Background required from the applicant :

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

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