Homogenization towards a gradient damage model for brittle fracture

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Many engineering applications with polycrystalline materials have to be designed against brittle failure. This requires a good fundamental understanding on the underlying micro-processes leading to material failure, as well as an efficient yet predictive method to capture the overall structural response, failure mode and residual capacity.

The project focuses on the bottom-up homogenization process of underlying micro-processes leading to a macroscopically continuous damage model. Specifically, we seek to achieve the following:

- minimal postulations and calibrations in the macroscopic model;
- full regularization during strain softening without any spurious damage growth;
- a continuous-to-discontinuous description of the failure process.

We are seeking 1 post-doctoral fellow for this project. The candidate should have a PhD in solid mechanics, mechanical engineering or any related field. Prior experience in at least one of the following areas is required

- Damage mechanics
- Homogenization theories, Multi-scale methods
- Higher order continuum theories
- Finite element implementation
- XFEM, Remeshing techniques

The project will start in Mar 2016. The contract is for a period of 12 months, with possibility of extension. Salary package and benefits are competitive and commensurate with experience, see http://www.nus.edu.sg/careers/whatyougettoenjoy.html

To apply, please send a **single** pdf file including cover letter, CV, a full list of publications and the contact details of 2 references, to ceeplh@nus.edu.sg