

## Mechanik-Seminar

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Referent:	<b>Prof. Dominique Leguillon</b> Institut JLRA, CNRS UMR 7190, Université P. et M. Curie, Paris, France
Datum:	Donnerstag, 02.12.2010
Uhrzeit:	10:00 Uhr
Ort:	KM-Seminarraum, Geb. 10.23, 3. OG, Raum 308.1
Thema:	<b>"Fragmentation of a concretion under a compressive loading"</b>

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**Abstract:** The mixed criterion (Leguillon, 2002) can raise some paradoxes related to the nucleation of cracks in brittle materials. It is based on the simultaneous use of two conditions: one in stress and the other in energy. This criterion is presented in the first part of the lecture with two examples: the role of cavities in the nucleation of cracks and the crack propagation in porous media.

In a second part, the problem of fragmentation of an inclusion in rocks is addressed. Embedded concretions and fossil inclusions are known to be possible sites of fracture initiation under compressive loads (Bessinger et al., 2003). A picture of these authors shows 5 parallel cracks in a calcareous inclusion embedded in sandstone. The cracks spacing is strictly incompatible with a mechanism of successive failures and reloading, the only explanation is that these failures occur almost simultaneously. The mixed criterion is able to predict such a mechanism of compression-driven tensile fracturing. It is strongly related to a size effect: the larger the inclusion diameter, the higher the number of possible fractures.

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Alle Interessenten sind herzlich eingeladen.  
Prof. Dr.-Ing. Thomas Böhlke