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## Seminar über Fragen der Mechanik

zu folgendem Vortrag wird herzlich eingeladen

Dienstag, **22.02.2011, 14:00 Uhr**, Egerlandstr. 5, Raum 0.044

### Phase Transitions in Thermosetting Resin Systems

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We consider a newtonian liquid in which chemical reaction of polymerization type take place. We suppose that chemical reaction causes phase change from liquid to rubber-like solid. The phase change is sustained by a certain amount of chemical reaction called gelation. Two different cases are considered. First one is without gradient of degree of cure in the volume. In the second part these are taken into account. Based on introduction of an intermediate configuration reflecting phase change of constituents we derive an expression of the potential energy release due to the gelation front propagation. As a result we obtain the input of solid phases into a chemical affinity tensor as a combination of Eshelby stress tensors determined with respect to stress free configuration of the initial and chemically produced solid constituents multiplied by chemical reaction parameters. Finally we formulate a simplest kinetic relation for the gelation front propagation.