Degradation and healing in particulate systems
Specialized Mini Symposium at EMI 2017
Engineering Mechanics Institute 2017 Conference, June 4-7, 2017, San Diego, California
Organized by the Jacobs School of Engineering, University of California, San Diego

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This mini-symposium focuses on the degradation, damage and healing in granular media including but not limited to chemically active soils, pressure/heat sintered granulates, coated grains, self-healing bio-concrete, glassy/viscoelastic polymers, biomaterials, asphalt mixtures, composites, precipitate-forming metal alloys, granular zeolites et cetera. We welcome all areas of engineering mechanics research including geomechanics, biomedical engineering, concrete design, and all modeling approaches including DEM, micro-mechanics, molecular dynamics, continuum mixture theory, finite element method, or others that explicitly incorporate underlying interaction at granular scale to demonstrate the effect on the material's mechanical behavior. We wish to emphasize that the grain size, inter-granular interaction or fluid-grain interaction may encompass any scale of study: molecular, micro-scale or macro-scale.

In particular, the following topics are of interest:

a) Development of models which quantify the effect of degradation and healing mechanisms on the bulk or thin film mechanical behavior. Methods such as micromechanics, continuum mixture theory, statistical mechanics, quantum chemistry etc. may all be used to embed micro/molecular scale damage and healing phenomena into constitutive models. Numerical simulation can involve several techniques including FEM, molecular dynamics, ab-initio calculation or combinations of them. Interesting details include:
   a. Incorporation of healing/degradation mechanisms at contacts, cross-linking, precipitate formation, effect of grain orientation, viscous flow, diffusion, dissolution, ion-transport slip etc.
   b. Constitutive model development including part a.
   c. Study of coupling between stress state, temperature and degradation/healing
   d. Numerical simulation with/without experimental validation, evolution of yield surface and failure envelopes with damage and healing
b) Experiments on underlying macro, micro or molecular-scale phenomena affecting degradation, damage and healing
   a. Laboratory investigation and demonstration of dominant mechanisms of degradation and healing and their coupling with the applied stress state, loading rate, temperature and chemical environment.
   b. High-resolution imaging and identification of relevant length scales at which damage and healing occur
   c. Experimental observations of transitions in rate-dependent behavior and fluid-structure interaction

Instructions for Submission of Abstracts

Please submit your abstract electronically before **January 1, 2017** following the instructions given below. You can register at http://jacobsschool.ucsd.edu/emi2017/register.php, login at http://jacobsschool.ucsd.edu/emi2017/login.php and submit your abstract to MS 71: Degradation and Healing in Particulate Systems. The conference is from **June 4 – 7, 2017**.

For the submission of the abstract, the following information is needed as unformatted text:

- Abstract title
- Names and affiliations of authors
- Presenting author
- Three to six keywords
- Abstract body, up to a maximum of 500 words
- Reference list, up to 6 lines
- Up to 3 graphics (accepted formats: GIF, JPEG, PNG).
- Mini-symposium to which the abstract is submitted: Please choose "**MS 71: Degradation and Healing in Particulate Systems**"
- Preference for oral presentation or poster

Important Dates: Abstracts must be received before **Jan 1, 2017**, Early Registration: **Jan 20, 2017 – March 15, 2017**, Late Registration: **March 16, 2017 – June 2, 2017**, Conference Dates: **June 4-7, 2017**