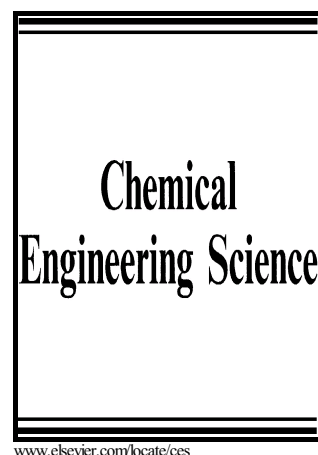


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Mechanical behaviour of a granular solid and its contacting deformable structure under uni-axial compression-Part II:

Multi-scale exploration of internal physical properties

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ABSTRACT

Following the previous companion paper, the proposed DEM model has been carefully validated and produced reasonable to good agreement with the corresponding laboratory experiments. This paper confidently probes the internal physical properties and extensively understands the multi-scale (macro-meso-micro scale) relationships in this granular system subjected to confined compression. The particle von Mises stress was proposed to effectively identify the direction and magnitude of strong force chains. Ring measurement cells were developed to calculate the spatial distributions of solid fraction, coordination number, friction mobilized factor, contact force vectors and stresses. The diagrams of contact force vectors were proposed to show the mechanism of force transmission onto the cylindrical wall. In

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