Evolution of size and shape distributions of comminuted particles under shear deformation

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A faults zone contains fine rock powders called gouge that have been ground up by past fault motions. Particle size distribution and particle shape of gouge particles affect the frictional properties of the fault and reflect the comminution process by the past fault motions. It is well known that particle size distribution of fault gouge show power-law distributions. Exponent of this power law is considered to reflect the style and degree of deformation. We did several shear experiments using a rotary shear apparatus with the shear displacement ranges from 10mm to 1m. In this presentation, we will discuss about the relationship between the particle size distribution and the degree of comminution of model particles by particle image analysis.

