# Feasibility Study of Morphological Characterization to Comminuted Particles by A Particle Characterization Approach (2)

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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 may 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 (PSD) of fault gouge show power-law distributions.
Exponent of this power law is considered to reflect the style and degree of deformation.
In this report, we will discuss about the relationship between the particle morphology and a style and a degree of comminution of model particles by automated particle image analysis and laser diffraction as a particle characterization method.
We did several shear experiments using a rotary shear apparatus with the shear displacement ranges between10mm to 10m.
As an automated particle image analysis, Morphologi G3-SE (Malvern Instruments) was used for evaluation of particle size and shape.
The observation mode was diascopic mode (Transmittance mode) and a magnification was choose to sufficient to cover 1 to 1,000um.
The sample was dispersed with SDU (Sample Dispersion Unit) which attached Morphologi G3-SE.
Number of measured particles was over than ten thousand and a parameter filter function on software was used based on shape and pixel number of particle image.
We also used a laser diffraction instruments with dry dispersion methods, Mastersizer3000 with Aero unit (Malvern Instruments) for evaluation of particle size in less than 1um as fine particles.

Keywords: Fault gouge, Particle size, Particle Shape, Commutation, Fractal Distributions

 