

Ocular Systems - Related publications

Elongation, Flatness and Compactness Indices to Characterise Particle Form

V Angelidakis, S Nadimi, S Utili - *Powder Technology*

DOI: <https://doi.org/10.1016/j.powtec.2021.11.027>

In this scientific publication we reviewed existing indices to characterise particle form and reported on their strengths and limitations. We then proposed a new set of indices for particle elongation, flatness and compactness, to overcome said limitations, as well as a new classification system to categorise particles as flat, compact, bladed or elongated.

Nano-Scale Characterization of Particulate Iron Pyrite Morphology in Shale

V Angelidakis, S Nadimi, M Garum, A Hassanpour - *Particle & Particle Systems Characterization*

DOI: <https://doi.org/10.1002/ppsc.202200120>

In this study we analysed the complex, morphology of micron-size iron pyrite particles, using nanotomography (sub-micron resolution). To explore the dependency of characterisation parameters to the imaging resolution, we conducted a sensitivity analysis of the pixels per diameter (ppd). Our results show that as low as 10 ppd can be adequate for some indices of particle form, while others can require as much as 40 ppd.

Characterisation of physical and mechanical properties of seven particulate materials proposed as traction enhancers

S Maramizonouz, S Nadimi, W Skipper, R Lewis - *In Scientific Data*

DOI: <https://doi.org/10.1038/s41597-023-02304-x>

Seven materials are studied including Austrian rail sand, standard Great British rail sand, waste glass beads, recycled crushed glass, non-coated alumina, coated alumina, and dolomite. Three-dimensional raw and post-processed micro-computed tomography images of more than 1200 particles are shared.

Characterisation and tribological testing of recycled crushed glass as an alternative rail sand

S Maramizonouz, S Nadimi, W Skipper, R Lewis - *Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit*

DOI: <https://doi.org/10.1177/09544097231164716>

In this study, an alternative adhesion enhancing particle system made of recycled crushed glass is examined in terms of density, size, shape distribution, mineralogy, mechanical properties, and bulk behaviour to better understand their characteristics in comparison with the typical Great British rail sand currently in use and reported in the literature.

SHape Analyser for Particle Engineering (SHAPE): Seamless characterisation and simplification of particle morphology from imaging data

V Angelidakis, S Nadimi, S Utili - *Computer Physics Communications*

DOI: <https://doi.org/10.1016/j.cpc.2021.107983>

We present a code that implements shape characterisation of three-dimensional particles in an automated and rigorous manner, allowing for the processing of samples composed of thousands of irregular particles within affordable time runs.

CLUMP: A Code Library to generate Universal Multi-sphere Particles

V Angelidakis, S Nadimi, M Otsubo, S Utili - *SoftwareX*

DOI: <https://doi.org/10.1016/j.softx.2021.100735>

Clumps and clusters of spheres have been used to simulate non-spherical particles, primarily due to the simplicity of contact detection among spheres and their ability to approximate practically any irregular geometry. The CLUMP code provides a unified framework, where a particle morphology can be approximated using different clump-generation approaches from the literature.