Measuring particle circularity in sediments using the Morphologi® G3

Introduction

The measurement of particle shape in the study of sediments provides information that is not captured in the particle size distribution. Particle shape can only be obtained in a particle imaging experiment using an appropriate magnification. The Morphologi G3 can measure particle shape in sediment samples with a particle size ranging from less than a micron to multiple millimeters.

Circularity is an important parameter in the study of sediments because it is sensitive to both the overall form and the edge roughness of the particles. It is therefore a tool particularly well-suited to investigate the nature of the particles.

Results

The circularity distribution of sediment particles expresses the variety of particle types that are present in a sample. It can be used to compare samples and help understand the proportions of specific particles types. It can also be used in conjunction with particle size or other shape parameters to describe the population in even greater detail. Figure 1 shows an overlay of the circularity distributions for 2 sediment samples with example images from different parts of the distribution;

Conclusion

The Morphologi G3 offers the ability to measure the shape of sediment samples, and consequently provides information about the nature of the particles present in the samples.

With thanks to Dr Jon Woodruff, Department of Geosciences, University of Massachusetts for supplying samples and data.

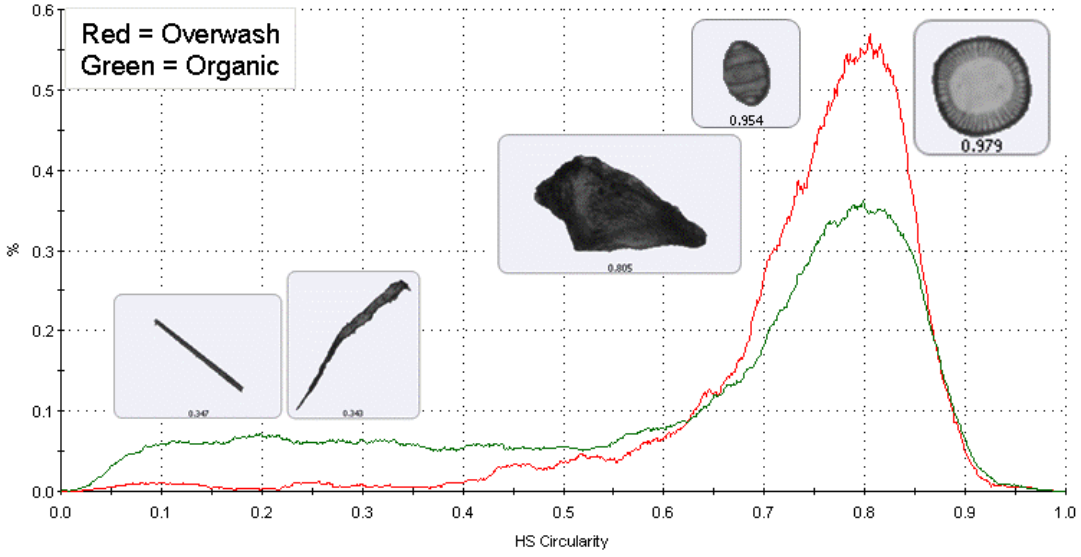
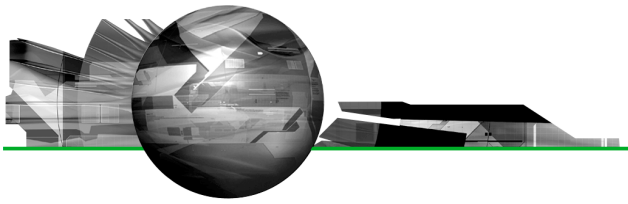


Figure 1: Particle circularity distribution of sediment samples with example particle images.



Malvern Instruments Ltd

Enigma Business Park • Grovewood Road • Malvern • Worcestershire • UK • WR14 1XZ
Tel: +44 (0)1684 892456 • Fax: +44 (0)1684 892789

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