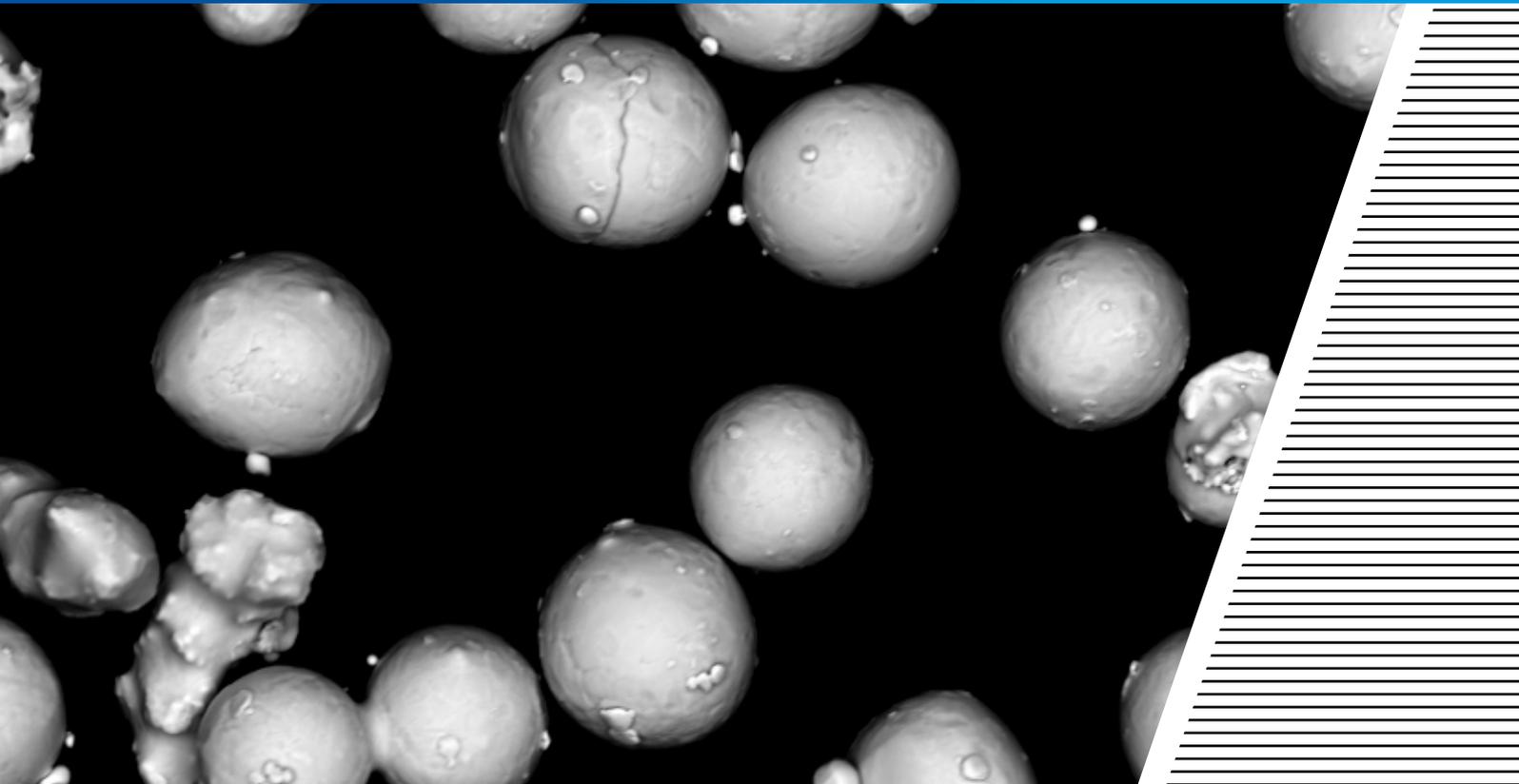


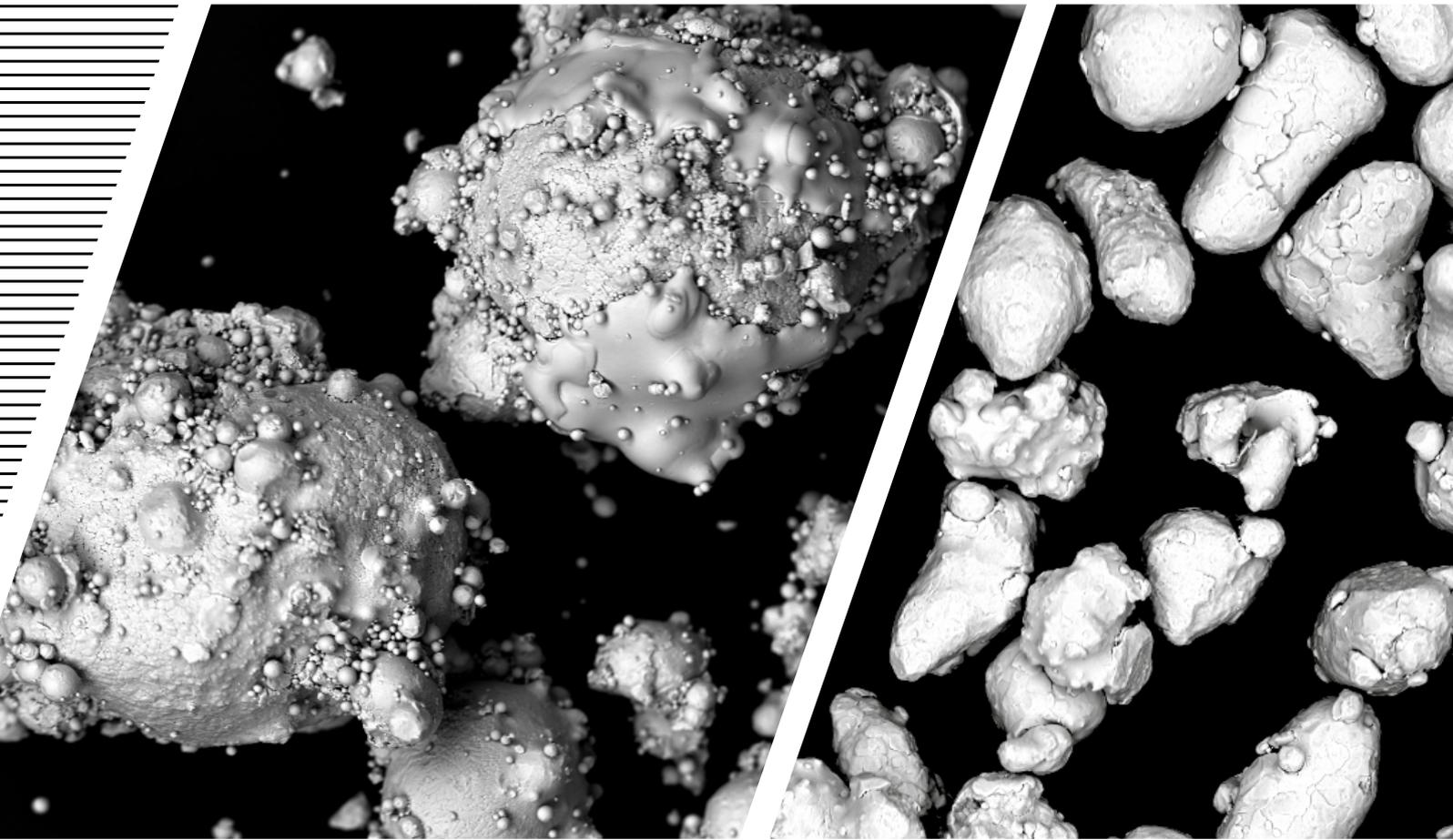
Market analysis of powder characterisation techniques



The University of Sheffield Advanced Manufacturing Research Centre (AMRC) has worked with Tier Two member Carpenter Technology to compare the different powder characterisation techniques currently available on the market.

The project involved comprehensively studying a range of powders with various particle size distribution: metal injection moulding (MIM), powder bed fusion (PBF), electronic beam (EB) and hot isostatic pressing (HIP); and understanding how different measurement principles influence the results obtained in terms of particle size and morphology.

In partnership with Carpenter Technology, AMRC engineers analysed a variety of powder properties using different lab-based equipment, which have principles based on dynamic image analysis, static images analysis and laser diffraction.



It is known that different measurement techniques produce different results due to the measurement principle of the machine and the algorithm used to analyse the data, therefore the aim of this work was to identify these trends to allow results to be correlated when comparing samples tested via different principles.

The results showed that as particle morphology deviated away from spherical, the magnitude in variance between results varied drastically. This was

due to the importance of orientation of the particle during measurement which can either underestimate or overestimate size and shape drastically.

This information will serve as guidance to allow specification data provided with the powder to be correlated to data obtained from customers when samples are measured within their laboratories.

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