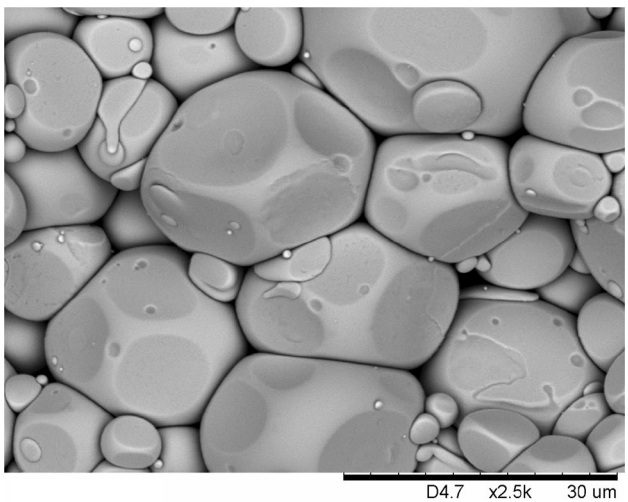
Metallography, Microstructure, and Analysis (2020) 9:791
https://doi.org/10.1007/s13632-020-00691-w

FEATURE

MicroArt

MicroArt highlights the beauty and charm found in the microscopic world of materials. Most of the time our focus is on the technical and scientific aspect of microstructures, but we also know that the objects we observe in the microscope are often striking in their appearance. Here we devote some space among our technical publications to showcase micrographs that possess an interesting artistic aesthetic quality.

Readers who are interested in sharing their own images for this feature may email them to the editor at ryan.deacon@asminternational.org.



This micrograph is a scanning electron microscopy image taken in the back-scattered electron mode from the fracture surface of a sintered alloy sample. The raw material was $Fe_{66}Cr_{10}Nb_5B_{19}$ powder alloy obtained by gas atomization. The major phase of the alloy is an amorphous phase. The powder was rapidly consolidated into a bulk material by Spark Plasma Sintering at a uniaxial pressure of 40 MPa. Consolidation was conducted within the supercooled liquid region of the metallic glass (sintering cycle: heating up to 570 °C at a rate of 50 °C min^{-1}, holding for 3 min at this temperature, cooling down to room temperature). The viscous flow of the alloy in the supercooled liquid region resulted in the particle shape change—from spherical to predominantly faceted. This shape change is not typical to particles of crystalline alloys. Consolidation can be carried out further to eliminate the remaining porosity. The fully consolidated bulk $Fe_{66}Cr_{10}Nb_5B_{19}$ alloy shows high hardness and high corrosion resistance due to the presence of an amorphous phase as the major phase.

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