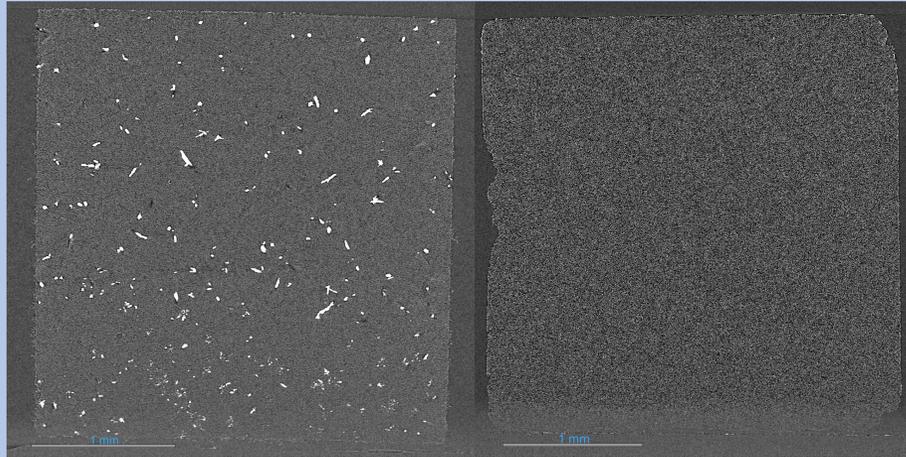


Identification and Removal of Contaminants from PolyHIPE

Jebin Jestine¹, Samantha O'Connell¹, Richard Taylor¹
1 Target Fabrication Group, AWE plc, Aldermaston,
Reading, Berkshire, RG7 4PR, UK

Summary



PolyHIPE, a low-density foam doped with chlorine, is manufactured in house at AWE, for use in plasma physics experiments. The sample is machined into billets for inspection with X-ray microscopy (XRM). XRM characterisation is used to find suitable areas for machining where there are no voids larger than 30 μm .

XRM revealed contaminants are present in the billets after synthesis. The billets were washed using sonication and critical point drying (CPD) to remove the salt contaminants found. XRM data is analysed using Dragonfly ORS for segmentation of contaminants and identifying voids. Ideal method for cleaning is found and verified using XRM.

Sonication was found to be the ideal method for removal of contaminants found. This is evidenced by the XRM data.



Dragonfly ORS

XRM characterisation identified contaminants present in the PolyHIPE billets. Dragonfly ORS was used to analyse these contaminants. The analysis route consists of segmentation of the contaminants to create a labelled class. Applying a multiconnected analysis to the labelled class identifies and separates connected components for analysis. Once the contaminants have been identified and separated it is possible to perform analysis to reveal information such as volume, surface area or orientation. This analysis revealed the contaminants and the variation in sizes within the billet. A similar process was applied to the sonicated billet to analyse the pore sizes and highlight pores that area larger than 30 microns.

