

MS07: 3D composites materials (Prof. Ivana Patridge, University of Bristol; Dr. Giuseppe Dell'Anno, National Composites Centre, Bristol, United Kingdom)

The use of composites with 3D architectures, created by weaving or the use of stitches, tufts, Z-pins or z-anchors, as parts of load critical structures, becomes a reality. However, research on this relatively new generation of preforms and composites has so far been limited, compared to the body of knowledge on 2D reinforced composites.

Through-the-thickness reinforcements (TTR) have been shown to enhance resistance to cracking caused by inter-laminar stresses and hence improve damage tolerance of the structures. In parallel, they exhibit specificities that differentiate them from 2D composites, with extra out-of-plane heterogeneity and complex geometrical architectures. For any experimental or numerical study, it is therefore necessary to take into account the meso-structure of the material to a much greater extent than has traditionally been the case in composites research. This mini-symposium, dedicated to the study of composite materials with 3D reinforcement, will be the opportunity for scientific exchange around the manufacturing process, experimental techniques and modelling of 3D composite materials. We encourage the academic and industrial communities, interested in future applications of these complex architectures, to engage in a discussion by active participation in this event.

