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Liquid resin print: A method for depositing resin for enhancing manufacturability and functionality of composite structures

Dmitry S Ivanov
University of Bristol, UK

Liquid resin print is a new concept in composites manufacture. It is conceptually similar to 3D printing but operates with low viscosity resins and is applied in a very different context. The concept is based on a sequential deposition of reactive resin through thickness of a dry textile preform followed by consolidation and curing. This concept allows integrating stiff or viscous patches in a dry textile preform prior to manufacturing using resin transfer moulding or infusion. Placing patches in a predefined pattern and locations allows gaining both processing benefits and gain in composite properties. On one hand, modifying deformability of preform can be beneficial for enhancing dimensional stability and defect mitigation in forming and draping of compliant fabrics. On the other hand, the local integration of resin allows incorporating addititves, create multi-matrix graded composites, and enhance functional and structural properties of composite structures where needed. The current presentation will give an overview of the process, potential applications, modelling approaches and challenges associated with processing of these materials.

dmitry.ivanov@bristol.ac.uk