



Title: Advances in additive manufacturing of carbon and carbide complex architectures: from replica of 3D printed templates to ceramic matrix composites

报告人: Alberto Ortona

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Abstract:

Ceramic additive manufacturing (AM) has been successfully employed across various industrial fields to produce components with medium to high dimensional precision. In this presentation, two ceramic AM techniques and related components made of carbon and carbide materials are presented: binder jetting and selective laser sintering (SLS) of polymers.

These AM techniques can produce an intermediate product that undergoes further processing, such as polymer infiltration and pyrolysis (PIP), reactive melt infiltration (RMI), or chemical vapor infiltration (CVI).

These technologies offer several advantages, including high maturity, low cost, and improved resolution, driven by the latest AM machines available on the market. An outlook of the further steps in AM will finally be presented. It involves the production of complex ceramic architectures reinforced with continuous fibres.

报告人简介:

Alberto Ortona教授, 瑞士南方应用科技大学 (SUPSI) 多材料研究中心主任。Ortona教授的研究方向主要包括: 树脂基与陶瓷基复合材料成型工艺、氧化物与非氧化物陶瓷材料、复杂异形陶瓷材料3D打印工艺等。获得了多项欧洲 (FP5, FP6, FP7 and H2020, HORIZON Europe等) 科研项目与瑞士科研项目 (Innosuisse, SNF)。当前, 研究团队重点关注复杂异形陶瓷材料 (氧化物、碳化物、陶瓷基复合材料等) 构件的净尺寸成型工艺与3D打印工艺研究。Ortona教授迄今已发表100余篇论文, 担任美国陶瓷学会会刊 (Journal of the American Ceramic Society) 编辑等。

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