

# IPPS Lecture & Seminar

## Characterisation of metal foam filled tubes

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Date & Time: **January 15, 2019, 8:40~10:10**

Venue: Kurokami South C3 [Kenkyutou I] (3rd Floor, #309)

### Abstract

The presentation will focus on lightweight structures filled with different metal foams for use as fillers in multifunctional construction elements. Therefore, new technologies and strategies have been also considered, with the goal to: i) fabricate structures, which are easily shaped per requirements, and ii) eliminate the additional joining step which is one of the main cost drivers of multi-material-design in the concurrent industry. New in-situ and ex-situ aluminum alloy structures will be presented, wherein the joining between the filler and hollow structures is achieved during the formation of the filler or by directly inserting the prepared filler into the hollow structures. This presentation will provide main results of this geometrical and mechanical study in which the crush performance and deformation modes were evaluated using uniaxial compressive and three-point bending tests supported by infrared thermography. The results have shown that new structures have a superior mechanical performance ensuring a high ductility and a very good crashworthiness behavior since they deform under compressive and bending loads without formation of cracks and without abrupt failure. The results have also indicated that a good interface bonding contributes to a more axisymmetric compressive deformation.