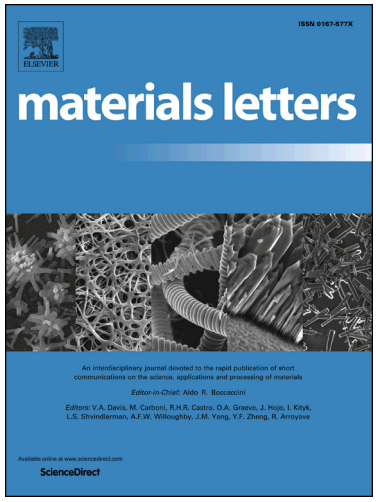

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ABSTRACT

In this work, we introduce a three-layer sandwich composite structure having an aromatic thermosetting copolyester (ATSP) foam core with two aluminum foam face layers joined together by an *in-situ* generated foaming mechanism. The ATSP foam core was synthesized on-site between the aluminum foam layers via a heat-induced polycondensation reaction. Upon curing, the ATSP foam core adhered to the aluminum foam layers through an interfacial compatibility-enabled chemical bonding. Lap shear experiments demonstrated that the bond strength clearly surpassed the tensile performance of the bare aluminum foam parts. Drop-weight impact tests showed that the three-layer sandwich structure could absorb four times the impact energy as compared to the bare aluminum foam of the same overall thickness.