Skin-core adhesion in high performance sandwich structures

高性能夹芯结构的皮芯粘合性能研究

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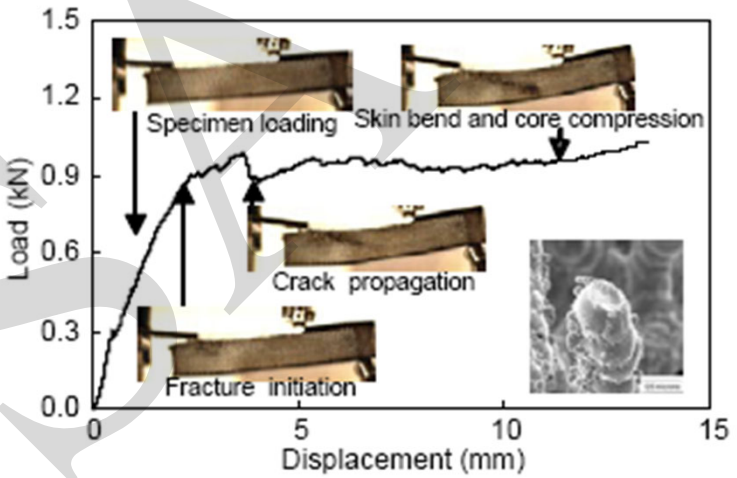
Main goal of this paper

To characterize the interfacial fracture toughness of a micro-lattice core based sandwich structure from quasi-static to dynamic rates of loading.

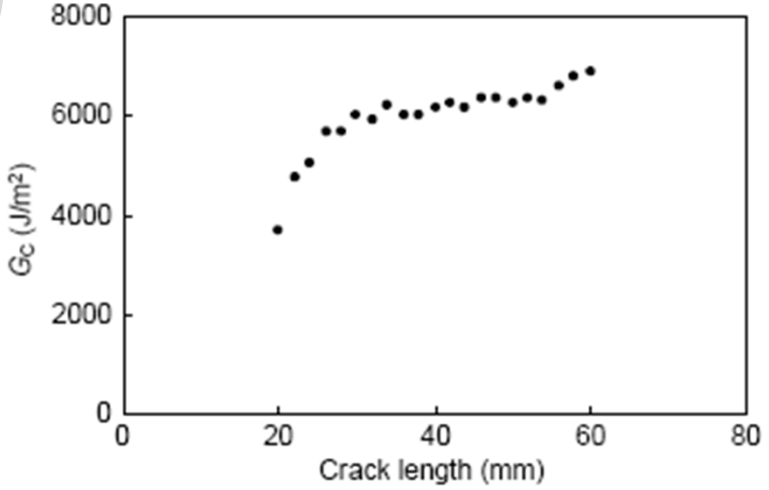
Main approach for the interfacial fracture toughness

The modified three point bend (MTPB) sandwich beam was used to characterize the interfacial properties of these sandwich structures.

Main Results



(a)



(b)

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Conclusions

- ✓ Sandwich structures were manufactured using a simple process without the need for a core-skin adhesive.
- ✓ An analysis of the composite sandwich beams showed that metal lattices can be used as cores with excellent delamination resistance.
- ✓ Metal lattice structures offer an excellent skin-core delamination resistance with fracture energies approaching 5500 J/m^2.
- ✓ Tests at higher rates of strain also showed that it is possible to characterize the fracture properties of lightweight sandwich structures at loading rates up to impact loading conditions.

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