**Fig. S1.** Mass gain versus surface to volume ratio (composite).

**Fig. 2.** Mass gain versus surface to volume ratio (matrix).
**Fig. S3.** SEM micrographs of un-aged plain weave surface.

**Fig. S4.** SEM micrographs of un-aged plain weave surface.
Fig. S5. SEM micrographs of aged plain weave surface.

Fig. S6. SEM micrographs of aged plain weave surface.
Fig. S7. SEM micrographs of un-aged twill weave surface.

Fig. S8. SEM micrographs of un-aged twill weave surface.
Fig. S9. SEM micrographs of aged twill weave surface.

Fig. S10. SEM micrographs of aged twill weave surface.
Fig. S11. IDR specimens after 20J impact; images are showing a length of 12mm (±0.25mm) of the middle section of the specimen's impact damage area.
Fig. S12. Single delamination failure mode observed for 3PB un-aged plain specimens.

Fig. S13. Multiple delaminations failure mode observed for 3PB aged plain specimens.
**Fig. 14.** Single delamination failure mode observed for 3PB un-aged twill specimens.

**Fig. 15.** Multiple delaminations failure mode observed for 3PB aged twill specimens.