

Identifying unmet needs for fiber-reinforced composites in consumer electronics



Challenge

A large chemicals company enlisted Lux's help determining the level of integration of composite product platforms in the consumer electronics industry that would best position it in the market.



Solution

Lux analyzed the greatest barriers to adoption for composites in consumer electronics and how improvements in specific composite properties might impact this. Lux mapped each unmet need to a solution domain, which were then prioritized by the breadth of impact and the likelihood of entry into new devices or components. Lux investigated the top domains in terms of the most promising developers of emerging technologies, the structure and dynamics of the supply chain, and the extent to which fiber-reinforced composites are used in each device type today.



Value

The client continues to develop its consumer electronics platform and asked Lux to help the company complete a follow-up investigation of the topic.

Views from across the supply chain

Statement	Material suppliers	Pain molders	OEMs	Lux's take
CFRP is used today mostly for aesthetics rather than for strength or lightweighting	■	■	■	<ul style="list-style-type: none"> This will be true especially in the near-term when the device designers (separate from the engineers) are the ones clamoring for CF, but we are already seeing this start to change with OEMs opting for painted UD CFRP The growing demand for ultrabooks (which by definition are very thin) will drive interest in stronger materials and thinner casings
Thermoplastic CFRPs are key to increased adoption in electronics	■	■	■	<ul style="list-style-type: none"> Thermoplastics enable faster cycle times that can accommodate the high volumes of consumer electronics. A thermoplastic offering must be coupled with tailored sizings to overcome poor fiber to resin adhesion.
Availability of carbon fiber is a concern for OEMs			■	<ul style="list-style-type: none"> While material suppliers consistently stated that availability was unlikely to be an issue going forward due to new capacity coming online, OEMs listed availability among barriers to adoption. This is more a business model challenge than a technical challenge; close partnerships with OEMs may alleviate the concern.
Pure play prepreggers are being pushed out of the supply chain by heavily integrated carbon fiber manufacturers		■		<ul style="list-style-type: none"> As major carbon fiber suppliers become more and more vertically integrated, it will be harder for non-integrated players to compete at any step of the value chain. Companies interested in producing prepregs should use integration or partnerships to secure CF supply.
Molders have limited expertise in developing unfamiliar molding processes		■	■	<ul style="list-style-type: none"> Molders have a clearly-defined comfort zone; any products that fall outside of this are unlikely to succeed without manufacturer support in molding process development.