

Scale-Up Accelerator



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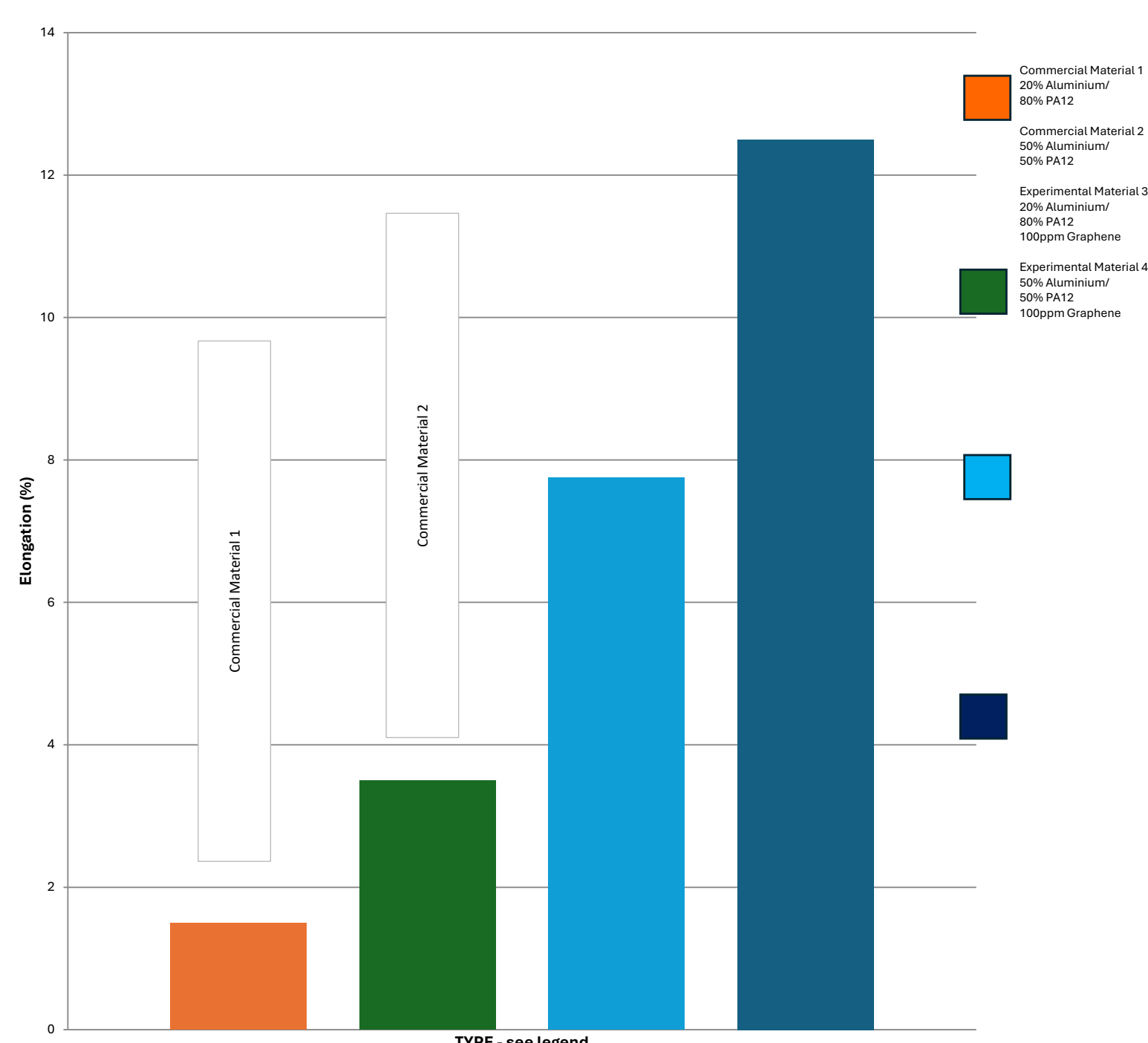
» THE CHALLENGE

Creating novel thermoplastic composite materials containing nano-functional fillers requires controlled dispersion without agglomeration, especially in polymer powder systems. Filler dispersion, interfacial bonding, particle morphology, flow behaviour, surface energy and thermal history determine whether powders process reliably and deliver reproducible performance at useful development and pre-production scale. These challenges cut across battery anodes, printing inks, SLS powders and other advanced thermoplastic composite applications.

» THE SOLUTION

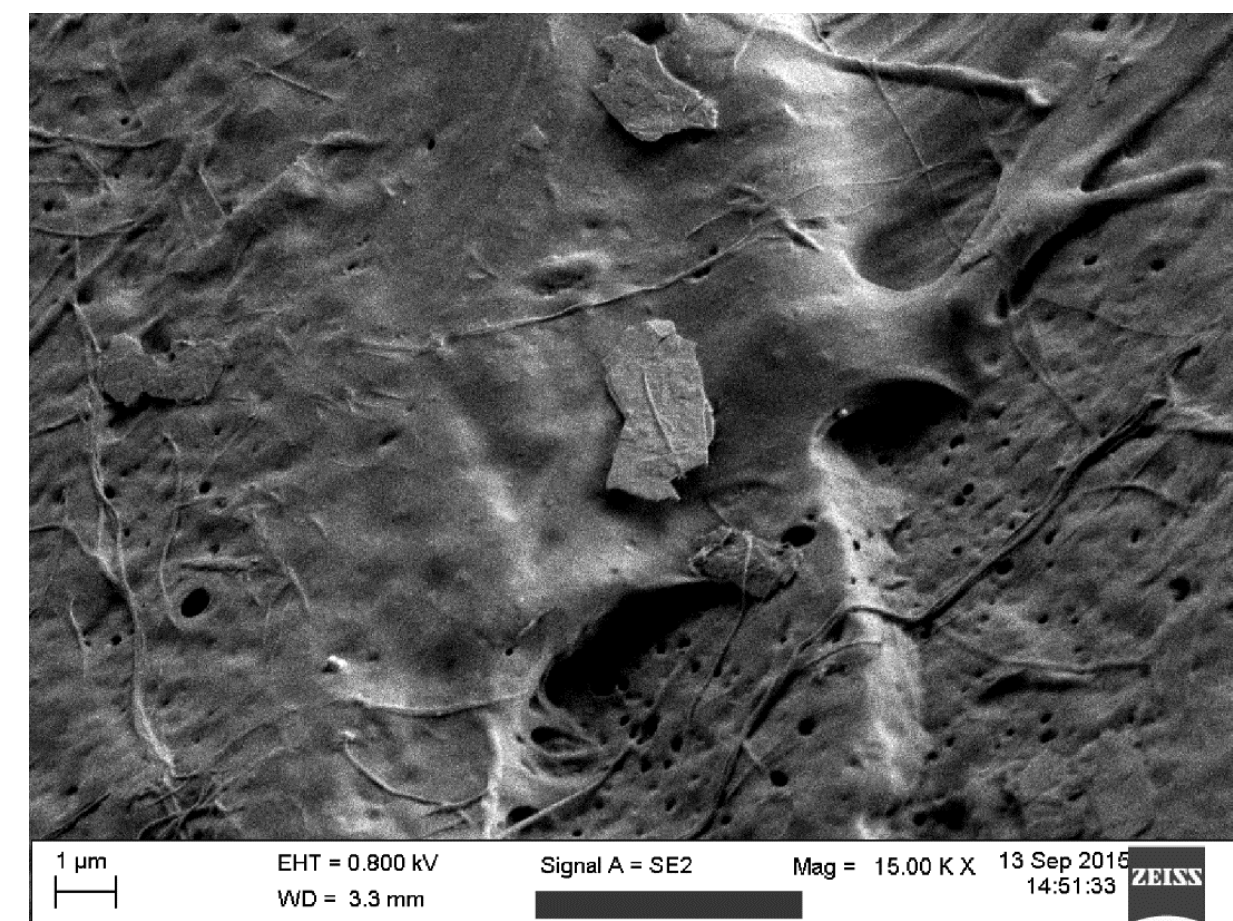
The Rapid Powders patented process particle-engineers thermoplastic polymer powders by coating each particle with one or more functional fillers and bonding them strongly to the polymer surface. This particle-level approach improves filler distribution, reduces agglomeration risk and creates composite powders with controlled surface functionality. Materials can be produced rapidly from 200 g feasibility samples to 1-2 kg trials and 30 kg scale-up batches, then consolidated into pellets or used directly as powders with engineered surface properties, including for example: electrical and thermal conductivity, wettability, anti-static behaviour, EMI shielding, sensing response, wear resistance, laser absorption and thermochromic behaviour.

100 ppm Graphene Improves Elongation in Aluminium-Filled PA12



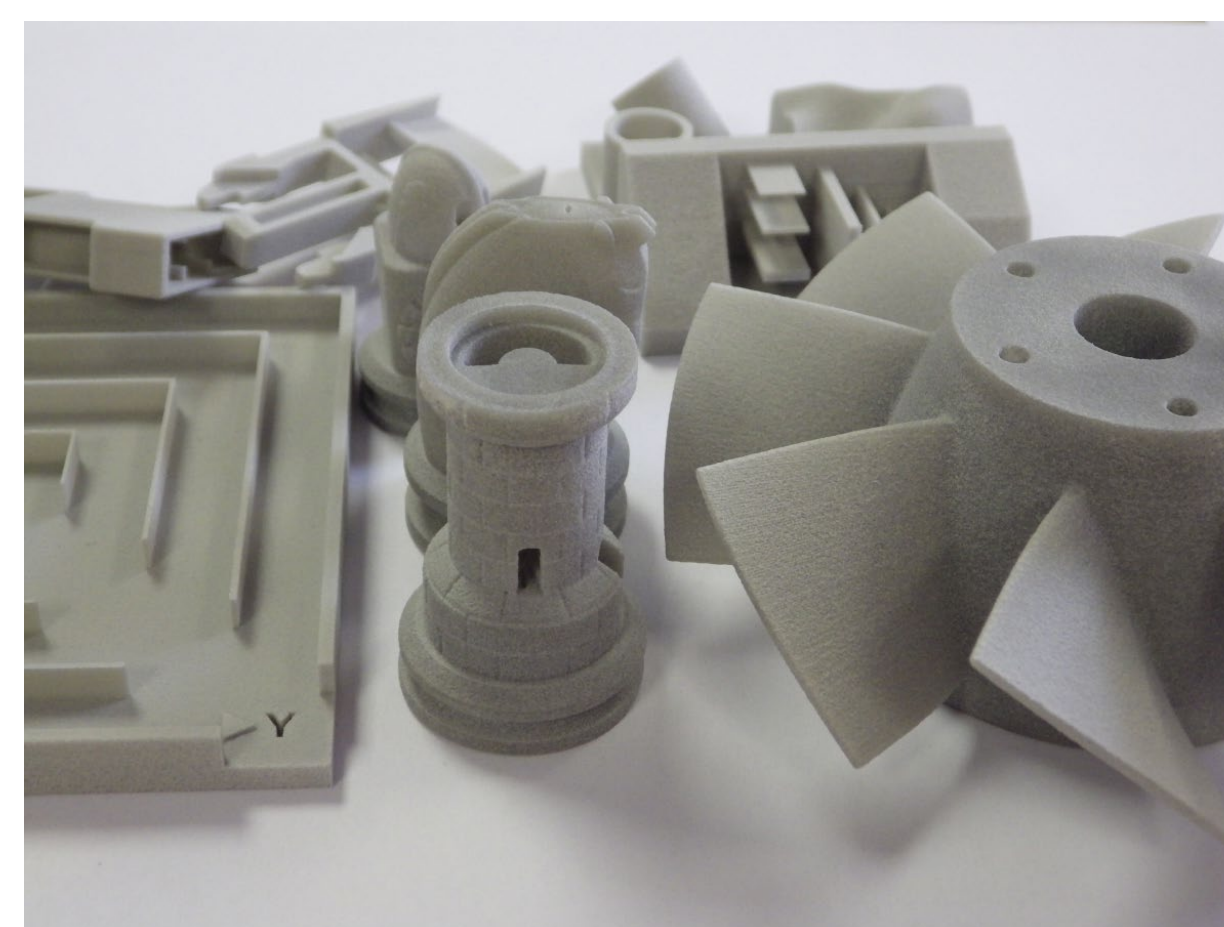
Low-loading graphene performance

SLS data showing improved elongation at 100 ppm graphene in aluminium-filled PA12 systems.



Graphene-coated polymer particles

Surface-modified thermoplastic powder showing particle-level functionalisation and the challenge of nano-filler agglomeration.



SLS demonstrator parts

Glass-filled PA12 parts containing 100 ppm graphene, manufactured from modified thermoplastic powder.

KEY PRODUCT INFORMATION

- Thermoplastic polymer particles coated with strongly bonded functional fillers for controlled surface properties.
- Supports conductive, thermal, wettable, thermochromic and mechanically modified composite powder systems.
- Rapid development batches from 200 g feasibility samples to 1-2 kg trials and 30 kg scale-up quantities.

IMPACT & APPLICATIONS

- Application areas include SLS powders, conductive inks, battery materials, conductive polymers, coatings, thermal management and functional composites.
- Engineered surface properties can support conductivity, wettability, sensing, shielding, colour-change and enhanced mechanical performance.
- Particle-level functionalisation enables low filler loadings to deliver measurable material property changes.