Metal-Graphene Composites – Challenges and Opportunities

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Graphene and its related 2D-materials possess outstanding properties, with the potential of having disruptive impact in several industrial segments. Metal-Graphene composites is one such appealing area of interest, considering the global efforts for better and more efficient material utilization. However, harvesting the potential of graphene by combining it with other, conventional materials to render composites with enhanced properties is not straightforward, and requires ample engineering.

Graphmatech is a materials start-up company founded in 2017 that synthesizes, functionalizes, and utilize graphene for manufacturing of graphene-containing composite materials. The company has developed methods for successfully incorporating various grades of graphene and related 2D-materials to metal powders, processes that are under rapid upscaling. While still on a powder level, this yields enhanced flowability and changed optical behaviour. Suitable consolidation methods for the metal-graphene powders includes but is not limited to additive manufacturing (AM) and hot isostatic pressing (HIP), and once consolidated into metal-graphene composites Graphmatech has demonstrated enhanced mechanical, electrical and thermal properties using several different starting elements and alloys.

FIGURES

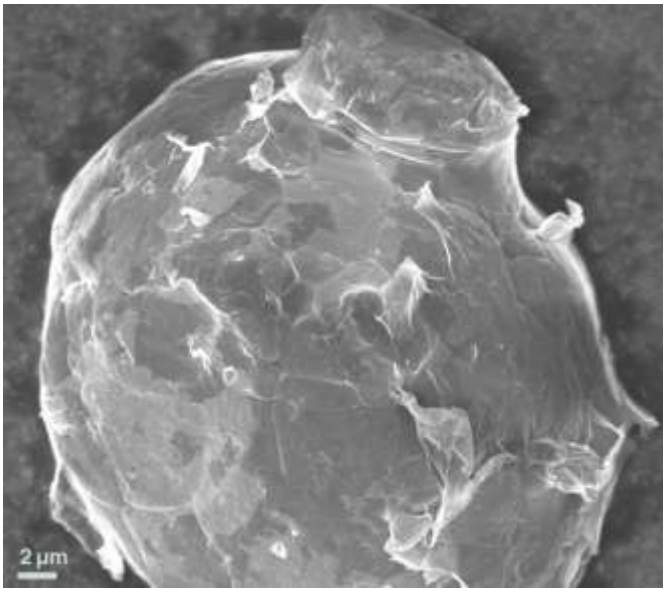

Figure 1: Example of metal-graphene powder with beneficial interactions