

Title:

Unlocking performances in coatings and composites with few-layer crystals: BeDimensional's atomically thin graphene and hexagonal boron nitride

Abstract:

The demand for advanced materials with extraordinary properties is accelerating across multiple industries, from aerospace to automotive, electronics, and energy. Few-layer graphene (FLG) and hexagonal boron nitride (hBN), two-dimensional crystals with unique mechanical, thermal, and electrical properties, have the potential to revolutionize these fields. However, until recently, the large-scale availability of atomically thin materials with precise control over their properties has been a significant challenge, limiting their practical application in real-world industrial scenarios. BeDimensional has overcome this barrier, achieving scalable production of FLG and hBN with atomic precision, thereby unlocking new performance capabilities for coatings and composites.

Few-layer graphene and hBN, produced in industrial volumes, combine exceptional mechanical strength, thermal conductivity, chemical stability, and barrier properties, making them ideal for high-performance coatings and composites. In aerospace, these materials can provide management of electricity and heat, in addition to protection against radiation, temperature extremes, and impact.

This presentation will delve into the journey of making atom-thick materials available on a large scale, up to demonstrating their transformative potential in diverse applications. We will explore the unique properties of few-layer graphene and hexagonal boron nitride, BeDimensional's cutting-edge production techniques that ensure their scalability, and a range of case studies showcasing their impact. With the large-scale availability of these 2D materials now a reality, industries can leverage their unparalleled properties to drive innovation, efficiency, and sustainability in the next generation of materials solutions.