

Bulk Materials NanoTechnology

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Bulk Materials NanoTechnology (BMN) is a specific type of materials nanotechnology which involves shrinking the 2-d defect grain/phase sizes down to the nanoscale level (i.e. 1 to 100 nm). Reductions in grain/phase sizes can be enabling to achieve properties and combinations of properties well outside known material boundaries. In this talk, the focus will be on how BMN can be applied as a surface technology to solve complex challenges in mainstream industries. The focus will be the technology progression from very thin physical vapor deposition coatings, to thin thermal spray coatings, and finally to thick weld overlay hardfacing and the development of wear plate technology. An emphasis in this talk will be placed on linking key mechanisms to their enabling nanoscale structures which result in the development of commercially exploitable properties including corrosion resistance, hardness, and wear / erosion resistance.