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From Computational Design to Coating Deposition: Challenges in Complex Oxide TBCs and EBCs

Abstract:

The next generation of TBCs and EBCs is being designed using computational methods and incorporates formulations based on multicomponent oxides. The design strategy focuses on tailoring materials to achieve desired characteristics at high temperatures and in severe operating environments. Complex oxides and high-entropy oxides typically contain multiple species in their composition, which can introduce challenges in feedstock preparation and coating deposition processes. In this work, these challenges will be addressed, and experiences with several deposition technologies will be presented to demonstrate these issues and their potential solutions.

Biography:

Jon Gutleber is a senior engineering and technology leader with more than 20 years of experience in materials science, thermal spray coatings, and surface engineering. Currently serving as Technical Leader for Coating and Materials Development at Oerlikon Metco, Jon leads global technology development initiatives focused on advanced coating materials and processes, including thermal spray and cathodic arc PVD technologies. Throughout his career spanning R&D, application engineering, and product development, Jon has led multidisciplinary projects from concept through commercialization, working closely with customers, production teams, sales organizations, and research partners. Prior to Oerlikon Metco, he was a Senior Project Engineer at MesoScribe Technologies, where he led advanced sensor development programs in collaboration with organizations including NASA, the U.S. Air Force, and the Department of Energy. Jon holds both a B.E. and M.S. in Materials Science from Stony Brook University and is the author of multiple patents and publications on coatings and technology.