

Dr. Ann Bolcavage, FASM Trustee-Elect (2021-2024)



**Dr. Ann Bolcavage, FASM
Engineering Associate Fellow
Rolls Royce Corporation
Indianapolis, IN**

Ann Bolcavage is Engineering Associate Fellow for Coatings at Rolls-Royce, a major manufacturer of propulsion solutions for civil aerospace, defense, and power systems markets. She is responsible for the strategic development of critical coating materials and manufacturing technologies for surface engineering to provide through-life support for all products. Over the course of her career, Dr. Bolcavage has focused on developing metallic and ceramic coatings and thin films, and her expertise includes the characterization of process-structure-property relationships leading to optimized thermal spray, chemical vapour deposition, and physical vapour deposition processing methods for OE and repaired aerospace and industrial gas turbine engine components.

Bolcavage joined Rolls-Royce in 2006 as a Senior Engineering Specialist in Indianapolis, IN and subsequently held roles as Surface Engineering Manager (UK) and Chief of Materials Capability Acquisition before her appointment to the Rolls-Royce Engineering Fellowship in 2014. She also helped establish and build key research programs for surface engineering at the Commonwealth Center for Advanced Manufacturing (VA) and at the University of Virginia Rolls-Royce UTC for Advanced Materials Systems. Prior to joining Rolls-Royce, Bolcavage worked at Praxair Surface Technologies in Indianapolis.

In recognition of her technical achievements and leadership, Bolcavage was appointed Fellow of ASM International in 2011. She has been active in ASM for 35 years, including leadership service in the Indianapolis Chapter and as Membership Marketing and Outreach sub-committee chair and Board member of the Thermal Spray Society.

Dr. Bolcavage received her B.S. with honors in Materials Science and Engineering from Lehigh University and her M.S and Ph.D. in Metallurgical Engineering from the University of Wisconsin-Madison. She has co-authored 20 technical publications, given 25 conference / workshop presentations (8 invited), and has 19 patented inventions.

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Abstract

Thermal Spray Technology – Essential and Enabling for Gas Turbine Engine Propulsion

The reliability and performance of gas turbine engines depend heavily upon protective and functional coatings applied by thermal spray processing. Traditionally applied onto components to provide life extension, many coatings are now designed into the product from the outset to enhance performance and accommodate reparability. Today's engines are expected to perform in environments that are increasingly hot and harsh, which drives innovation for improved coating materials and architectures. Digital technologies are also transforming the capability of thermal spray processes and ensuring a greater level of manufacturing control.

Abstract

Advanced Materials and Process Technologies to Enable Sustainable Growth for Aero Gas Turbine Engines

The increasing efficiency and performance requirements for modern aerospace gas turbine engines continuously drive capability improvements in materials and manufacturing technologies. For the materials engineer, the challenge is to enable the resulting more aggressive mechanical designs and higher temperatures while at the same time keeping weight and cost in check. Advances in materials design and process technologies, in conjunction with integrated computational materials engineering (ICME), will deliver clean, safe, and competitive propulsion solutions. Examples of key technologies include coatings, ceramic matrix composites, and additive manufacturing. The arrival of sustainable hybrid propulsion will also require an understanding of electrical and magnetic materials.