

**Bertrand Jodoin, University of Ottawa (uOttawa)**

**Title:** “How SAF and hydrogen utilization as alternative fuels can challenge current aerospace coatings: The case of MCrAlYs”

**Abstract:**

The inclusion of high hydrogen content fuels such as Syngas in aircraft operation and the potential to use hydrogen as fuel of the future to reach new emission targets combined with the unremitting objective of the aerospace sector to reach higher thermodynamic efficiency lead to new challenges for the gas turbine materials. Coatings able to withstand oxidation not only under high temperature environment but also under higher humidity levels because of the use these alternative fuels are required. Few studies are currently available on the behavior of MCrAlY coatings exposed to these environments.

MCrAlY thermal sprayed coatings are typically used in the hottest sections of gas turbine engines. They can be used alone as an anti-corrosion coating or as a bond coat to improve the performance of Thermal Barrier Coating (TBC) systems. Cold Spray can be considered as a potential method to produce MCrAlY coatings, with many benefits inherent to the reduced exposure of the feedstock powder to high temperature, preventing melting and detrimental in-flight oxidation. The study aims at exploring the potential of Cold Spray to produce MCrAlY coatings and begin to establish their behavior under high temperature/ high humidity environments by assessing the various mechanisms that result from the presence of elevated humidity levels

**Biography:**

Dr Jodoin is a Professor at the University of Ottawa (uOttawa), and the Director of the uOttawa Cold Spray Lab, the first CS lab in Canada. He is one of the pioneers of CS research and development in Canada and a world-renowned authority in that field. He has made seminal contributions to the understanding and advancement of the CS technology in Canada, for which he was recognized by ASM International in 2022 as ASM Fellow for significant contributions to the understanding and development of the cold spray process and CSAM. He has received 3 Best Paper of the Year Award from the Journal of Thermal Spray Technology for his work on Cold Spray. His research innovations in CS have resulted in three start-up companies. He has established strong industrial collaborations on cold spray with multiple aerospace and energy companies and is also leading development efforts on effusion and transpiration cooling of combustors through laser additive manufacturing processes. Dr. Jodoin is the current JTST Editorial Committee Chair and a founder and organizing member of the ASM-TSS Open Mic Series