

Wednesday Afternoon, May 25, 2022

Special Interest Talks

Room Town & Country A - Session SIT3-WeSIT

Special Interest Session III

Moderator: Samir Aouadi, University of North Texas, USA

1:00pm SIT3-WeSIT-1 Tribological Coating Solutions and Lubrication Strategies for Gas Turbine Engines, *Pantcho Stoyanov* (pantcho.stoyanov@concordia.ca), Concordia University, Canada **INVITED**

The advancement of durable gas turbine engine components depends heavily on the development of high-performance materials, which can withstand extreme environmental and contact conditions (e.g. large temperature ranges, high contact pressures, and continuous bombardment of abrasive particles, all of which degrade the physical properties). In particular, due to the large number of complex contacting and moving mechanical assemblies in the engine, the lifetime of certain structures is limited by the tribological performance of the employed materials and coatings. This talk will provide an overview of tribological solutions and lubrication strategies employed in several sections of gas turbine engines. After a general review of aircraft engine tribology, the talk will focus on tribological coatings and materials used to minimize fretting type of wear. A series of studies on the friction and wear behavior of Ni-based and Co-based superalloys at elevated temperatures will be presented. Emphasis will be placed on the correlation between the third body formation process (e.g. oxide layer formation, transferfilms) and the tribological behavior of the superalloys. This talk will conclude with the future strategies of tribological coating solutions in gas turbine engines.

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