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JTST HIGHLIGHTS

The *Journal of Thermal Spray Technology (JTST),* the official journal of the ASM Thermal Spray Society, publishes contributions on all aspects—fundamental and practical—of thermal spray science, including processes, feedstock manufacture, testing, and characterization. As the primary vehicle for thermal spray information transfer, its mission is to synergize the rapidly advancing thermal spray industry and related industries by presenting research and development efforts leading to advancements in implementable engineering applications of the technology. Articles from recent issues, as selected by *JTST* Editor-in-Chief André McDonald, are highlighted here. In addition to the print publication, *JTST* is available online through springerlink.com. For more information, visit asminternational.org/tss.

SUSPENSION AND SOLUTION PRECURSOR PLASMA HVOF SPRAY: A REVIEW

Garima Mittal and Shiladitya Paul

Thermal spray, being a cost- and time-efficient process, is used extensively in industrial and engineering sections for mass production of desired coating structures, allowing to deposit a wide range of materials on various substrates. Conventionally, powder feedstocks are used in plasma and high-velocity oxy-fuel (HVOF) thermal spray that has limitations such as limited feedstock particle size (10-100 µm), clogging and limited options for coating materials. Liquid feedstocks, in the form of suspensions or precursor solutions could potentially resolve these issues by allowing nano- and submicron particles to be deposited, where unlike dry feedstock, the liquid medium helps in reducing the friction and avoiding the clogging. (Fig. 1)

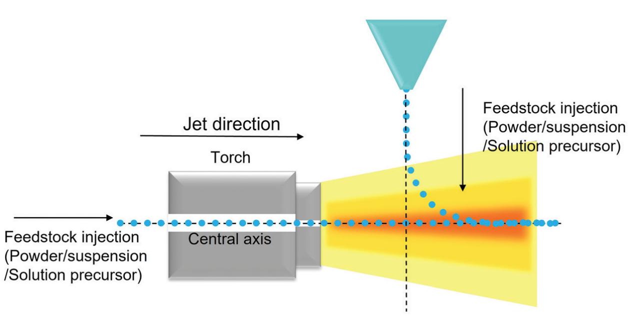

Fig. 1 — Schematic representation of hybrid injection of the feedstock into the plasma/flame jet during plasma/HVOF process.

MICROSTRUCTURE AND MECHANICAL PROPERTIES OF MULTI-PHASE REINFORCED $MoFeCrTiWNb_{2.5}(Al_2O_3)$ HIGH-ENTROPY ALLOY LASER CLADDING COATINGS

Shisong Zheng, Fang Zhou, Shihua Kuang, Wencheng Liu, and Qibin Liu

In this study, high-entropy alloy coatings, based on $MoFeCrTiWNb_{2.5}(Al_2O_3)_x$($x = 0.4, 0.45, 0.5, 0.55, 0.6$), were successfully fabricated on the surface of an M2 high-speed steel by laser cladding. The addition of Al_2O_3 promoted the formation of a eutectic microstructure. When $x < 0.5$, the coatings had a hypoeutectic structure with a proeutectic BCC phase. When $x > 0.5$, the coatings formed hypereutectic alloys with a proeutectic Laves phase. When $x = 0.5$, the coating had a typical eutectic lamellar microstructure with a hardness of 775 $HV_{0.2}$. The microstructure and property evolution of $MoFeCrTiWNb_{2.5}(Al_2O_3)_{0.5}$ coatings treated for 6 h at different annealing temperatures of 750-1050°C were investigated. The phase structure remained unchanged after annealing. (Fig. 2)

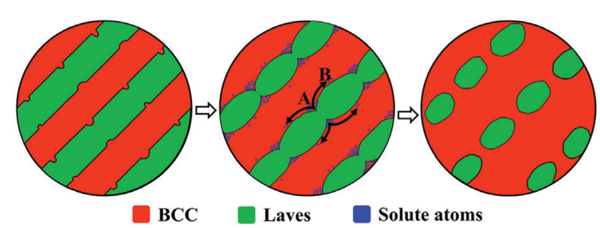

Fig. 2 — Schematic of the evolution of eutectic Laves lamella under high temperature.