

Relevance of Atomic Diffusion Additive Manufacturing (ADAM) in cryogenics and vacuum applications

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Atomic Diffusion Additive Manufacturing (ADAM) represents cutting-edge technology in the field of cost-effective additive manufacturing. This study investigates the viability of utilizing ADAM for producing components intended for cryogenic heat transfer, heat exchanger etc. in vacuum environments.

The emergence of ADAM presents a promising alternative to traditional metal printing technologies, offering notable cost efficiencies. However, concerns arise regarding the suitability of ADAM-produced parts for these extreme cryogenic temperatures and vacuum tightness due to the possible imperfection of the powder bonding after the thermal sintering and binder removal. To address this, an experimental evaluation was conducted, focusing on the heat transfer performance of ADAM-produced parts under cryogenic conditions.

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