CHALLENGES IN USING ADDITIVE MANUFACTURING TECHNOLOGIES IN THE AEROSPACE DOMAIN

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Main challanges AM poses to aerospace sector

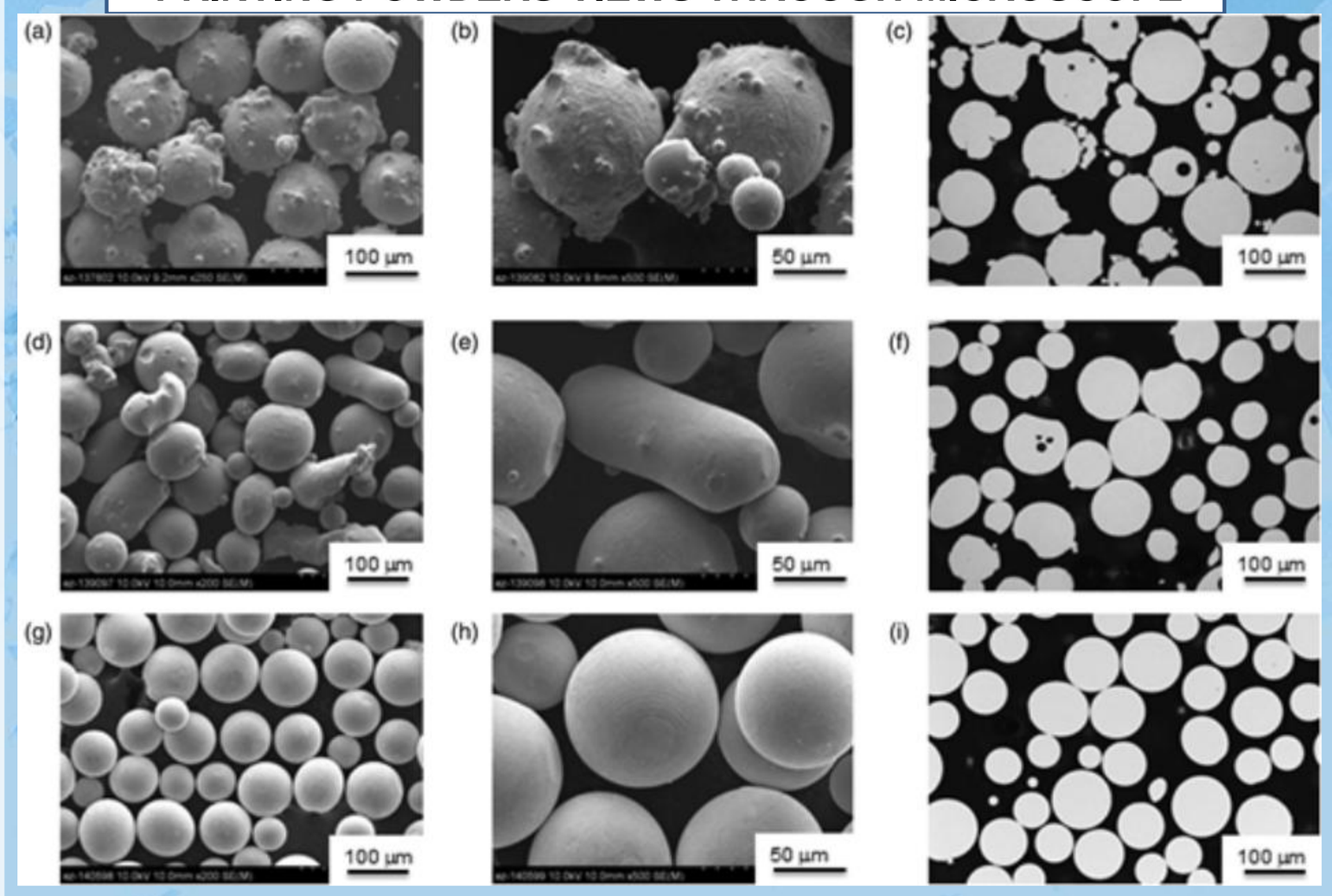
Certification of manufacturing and repair process	Certification of new components	Limited and uncertain performance due to low maturity of the technology	Requirement for standards and regulations	Educating manufacturers about the potential uses and benefits of AM	Process scale-up	Input material standardization

BENEFITS

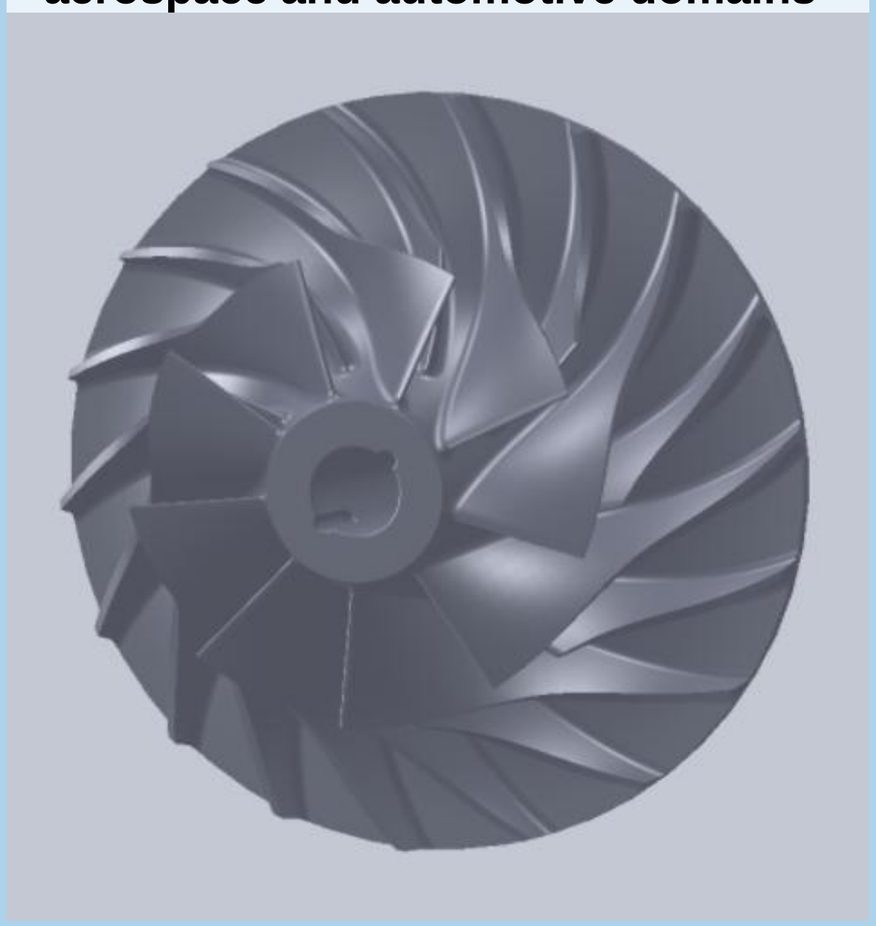
AEROSPACE SECTOR

- Large design freedom
- Reduced time between design and manufacturing
- Recycling improvements and lower material waste
- Potential for improved quality and reduced rejection rates
- Reduced material inputs and handling errors
- Simplified supply chains
- Automated manufacturing processes using hybrid technologies
- Lightweight products
- Reduced processing time
- Increased flexibility for repair operations
- Component upgrade during repair process

PRINTING POWDERS VIEWS THROUGH MICROSCOPE



Part studied for the AM technology in aerospace and automotive domains



MATERIAL PROPERTIES TROUGH THE AM TECHNOLOGY

Material	Technology		Yield strength (MPa)	Ultimate tensile strength (MPa)	Ref.
Ti6Al4V	Additive manufacturing process	EBM	830	915	[5]
		SLM	990	1095	[5]
		WAAM	803	918	[7-8]
	Other manufacturing processes	Forging	828	897	[9]
		Hot forging	790	870	[5]
		ISO 5832-3	>780	>860	[5]
Inconel 718	Additive manufacturing process	EBM	580	910	[10]
		SLM	552	904	[10]
		SMD	473	828	[10]
	Other manufacturing processes	Normal casting	488	786	[10]
		Forging	915	1090	[11]
		Precision casting	1185	1432	[12]
		Hot isostatic pressing	506	667	[13]
		Specification AMS 5662G	993	1022	[14]

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