**POSTER PRESENTATIONS**

**A Novel Approach of Fabricating Polyimide Fiber Structures from Powder by Cold Spray**

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High-performance thermosetting polyimide fibers are crucial for aerospace, fireproof textiles, and energy storage, but conventional methods like electrospinning are solvent-intensive, multi-step, with limited scalability. This study presents a single-step, solvent-free approach to fabricating polyimide (PI) fibers using the cold spray (CS) technique. A low-pressure CS system using air as the carrier gas was employed to deposit coatings at temperatures between the glass transition (Tg) and the thermal decomposition threshold of polyimide. At temperatures exceeding Tg, single-layer, uniform deposits with a thickness of 2.7 mm were achieved. Remarkably, near the imidization temperature, fiber-like structures with an average diameter of 3.58 μm emerged, highlighting their potential for scalable fiber production. High-speed imaging provided real-time visualization of fiber formation, offering insights into the underlying mechanisms. This solvent-free process eliminates hazardous chemicals, reducing processing time from hours to seconds, while enabling customized fiber geometries for large-scale coatings and fiber structures. These findings position CS as a scalable, sustainable alternative to conventional PI fiber fabrication.