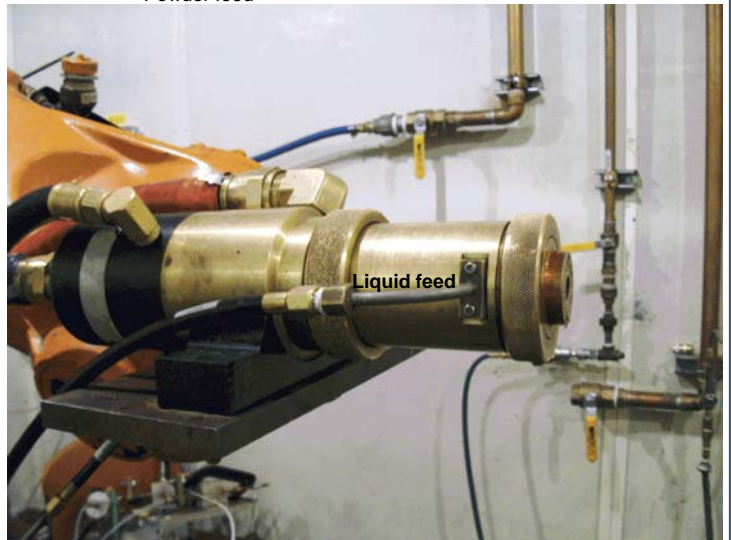
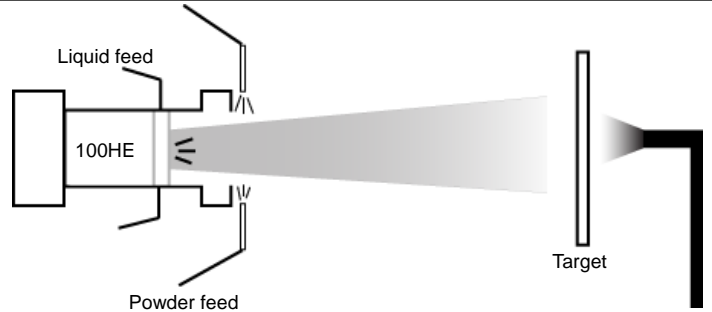


Emerging Applications

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Axial Feed Liquid Precursor Plasma Spray

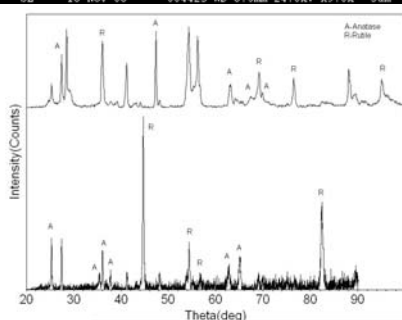
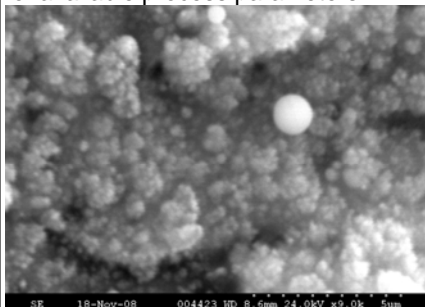
- Particle size control, phase control and deposition efficiency can be substantially improved by axial injection of liquid precursor.
- However, in a single cathode DC plasma configuration liquid precursor is usually fed externally
- A wide variety of nano-structured coatings have been obtained by axial injection approach at the University of Michigan.
- The deposition efficiency is much higher compared to side injection under identical operational condition
- Axial injection also enables co-deposition of nano-particle embedded composite coatings using liquid precursors and common powders used in plasma spraying
- This is feasible due to the availability of wide range of operational parameters in 100HE gun as well as the stable arc behavior inherent to the gun design



Energy/Medical Applications

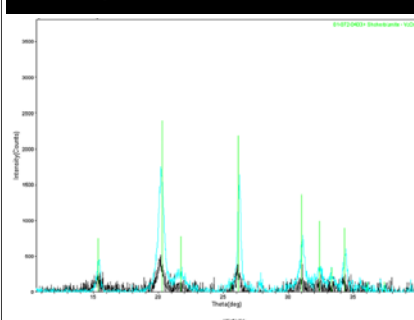
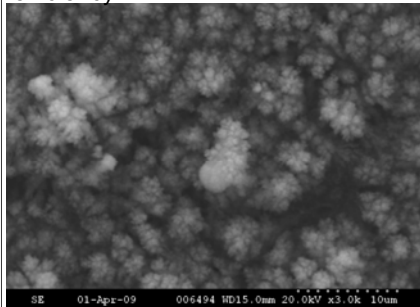
Nanotitania

- Titania nanoparticle coatings from liquid precursor for energy storage applications
- Enables control of the phase fraction (Anatase vs Rutile) due to wide range of available process parameters.



Nano V2O5

- V2O5 nanoparticle coatings from liquid precursor for energy storage applications
- Close control of unwanted oxide phases yields higher storage efficiency



Titania Embedded HAP

- Preserves HAP phase under a range of operating parameters
- Enables codeposition of titania nanoparticles synthesized *in-flight* from liquid precursor and HAP for antibacterial activity

