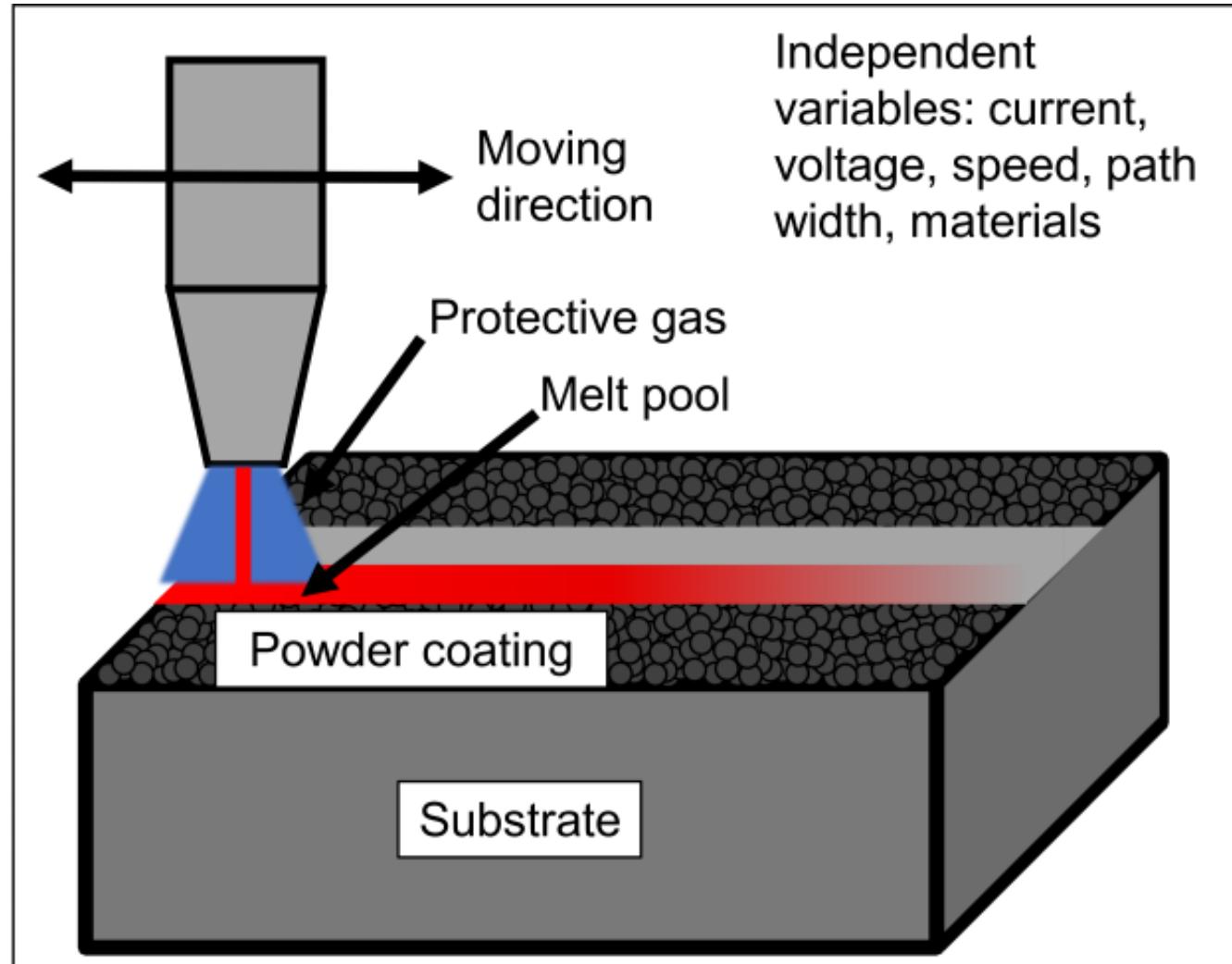


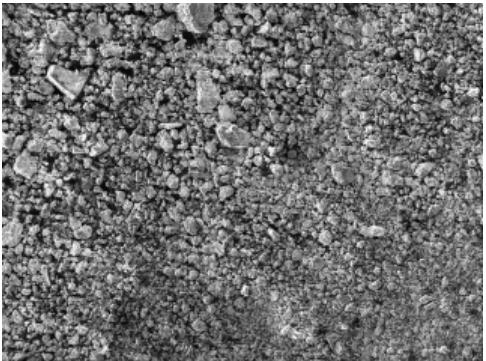
Flash heating: a new coating method

- High heat input in localized region
- Raster scanning fabrication
- Apply high-temperature coating to low melting point substrate

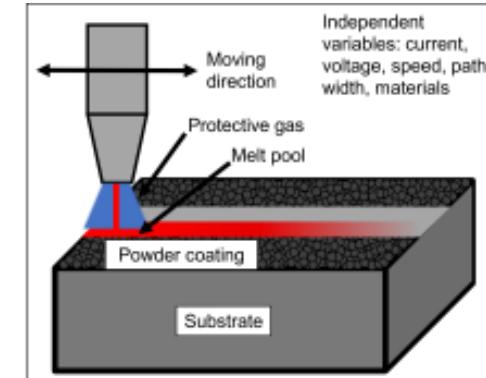


Design methodology

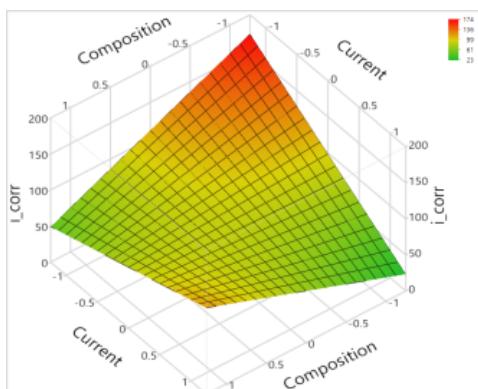
Coating design



Coating fabrication technique



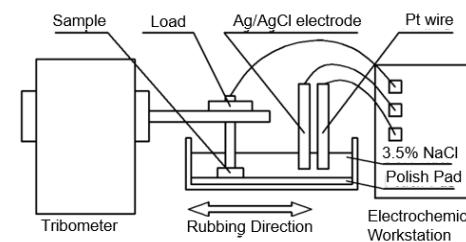
High-performance coatings



Coating optimization



Coating characterization techniques

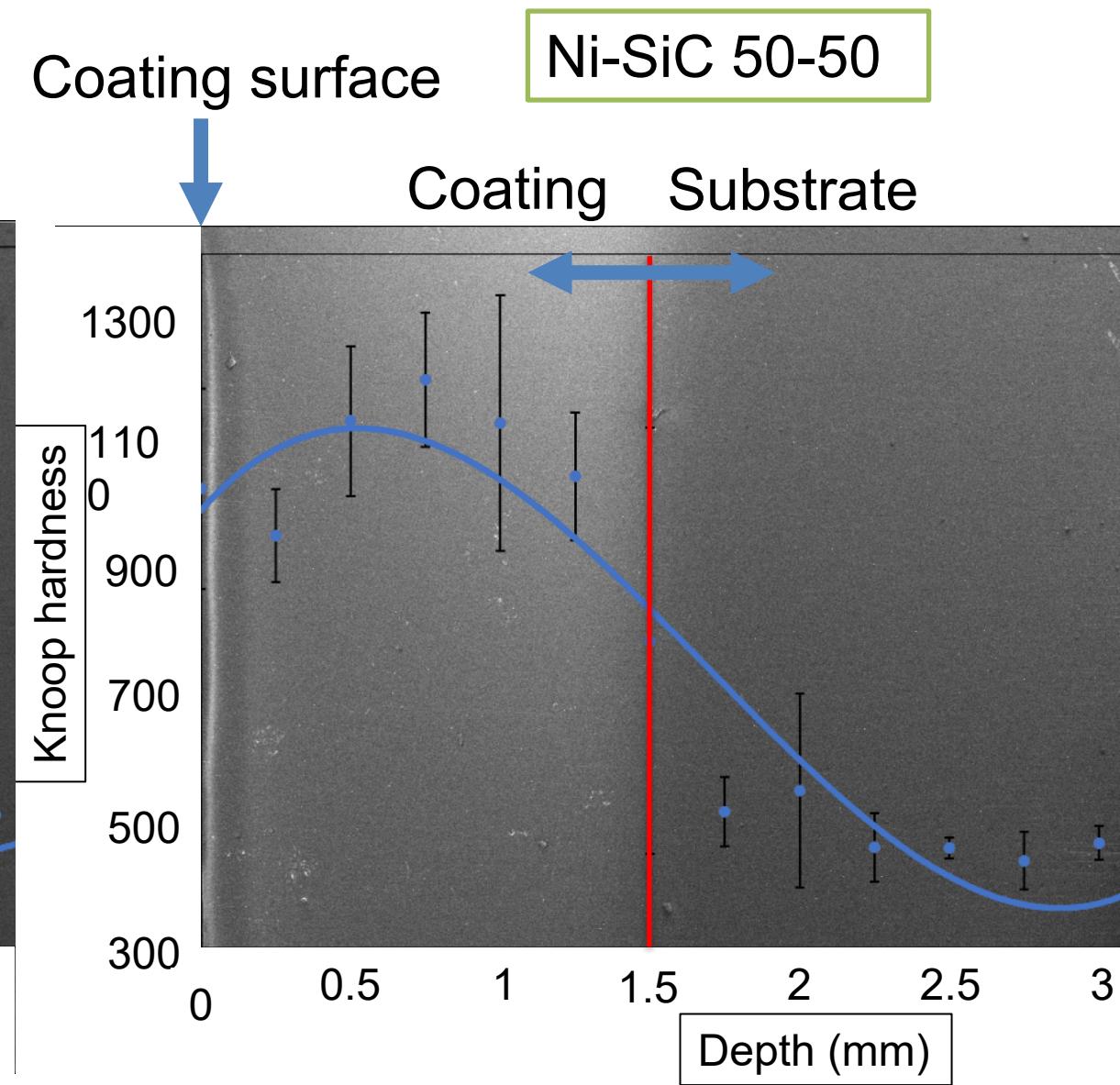
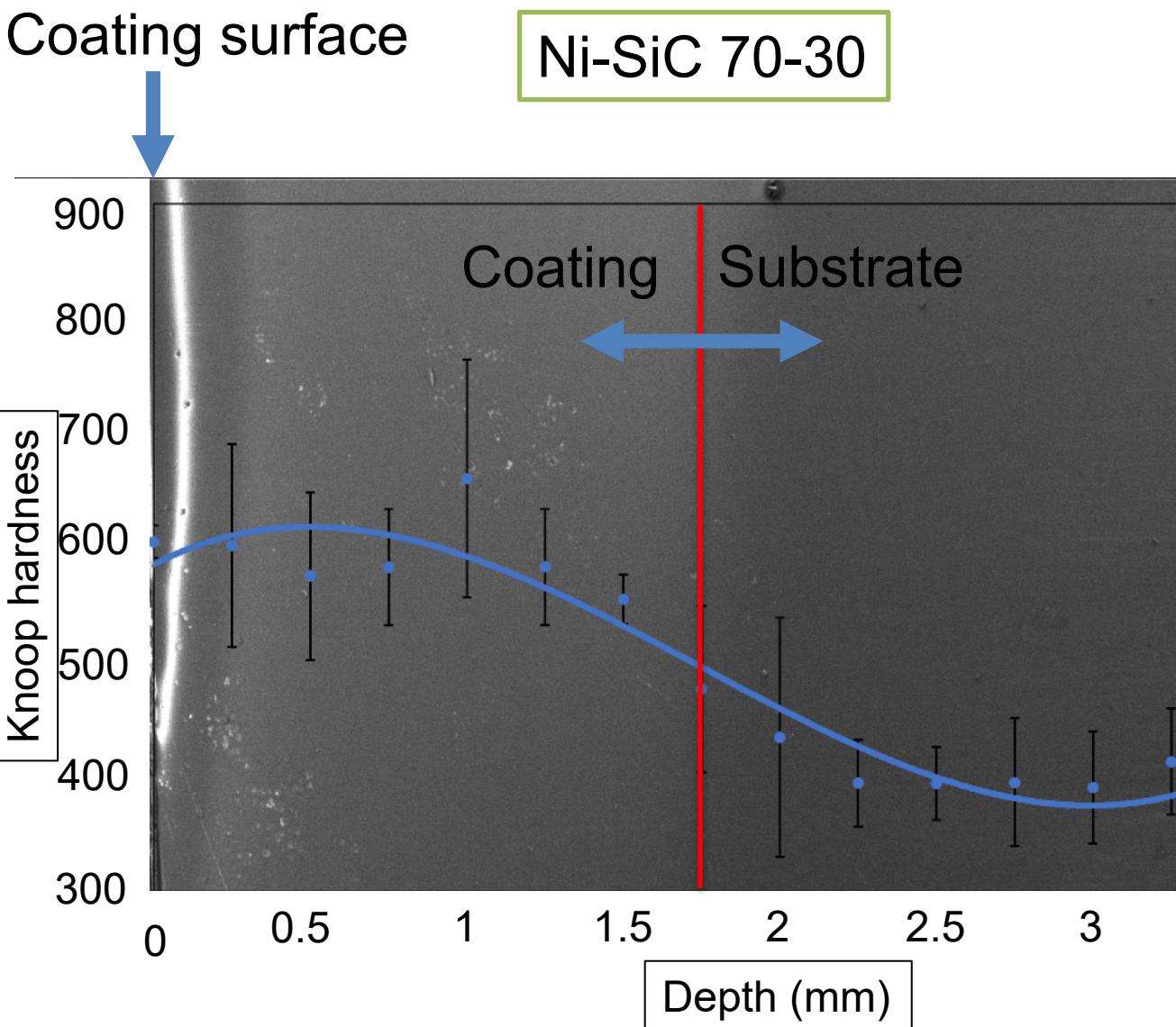


Heat dissipates during moving heat source

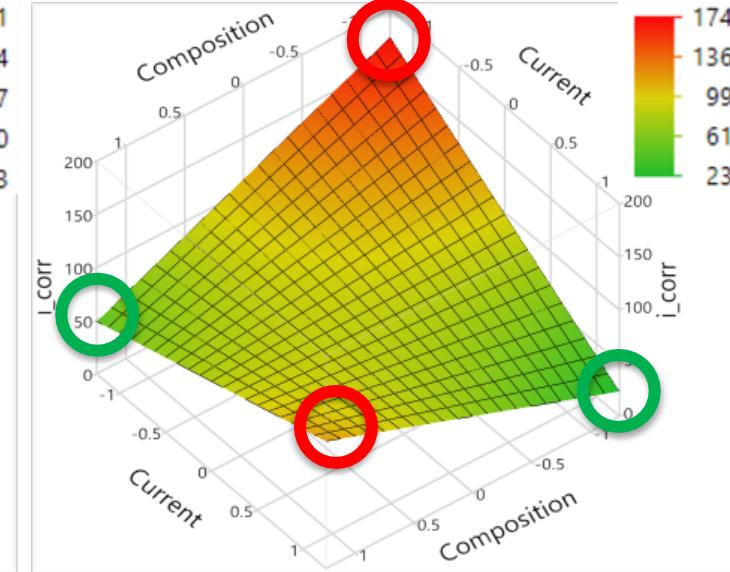
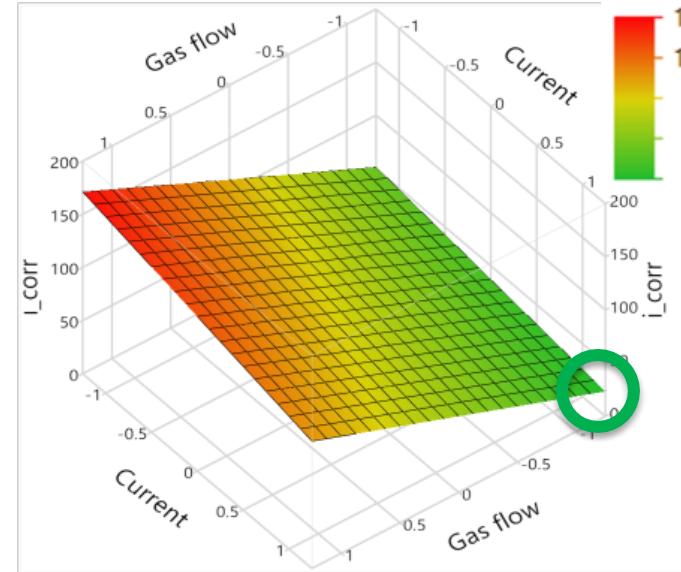
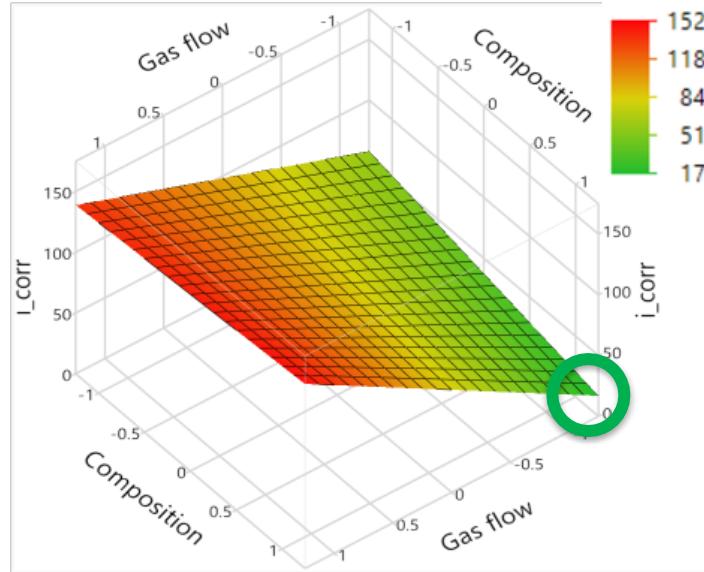


Cross section of coating sample

High-hardness Ni-SiC coating characterization



Optimization of corrosion performance



Optimized corrosion performance:

- High Ni content
- Low gas flow

Optimized corrosion performance:

- High current
- Low gas flow

- Surface forms a saddle
- requires simultaneous optimization of current and composition