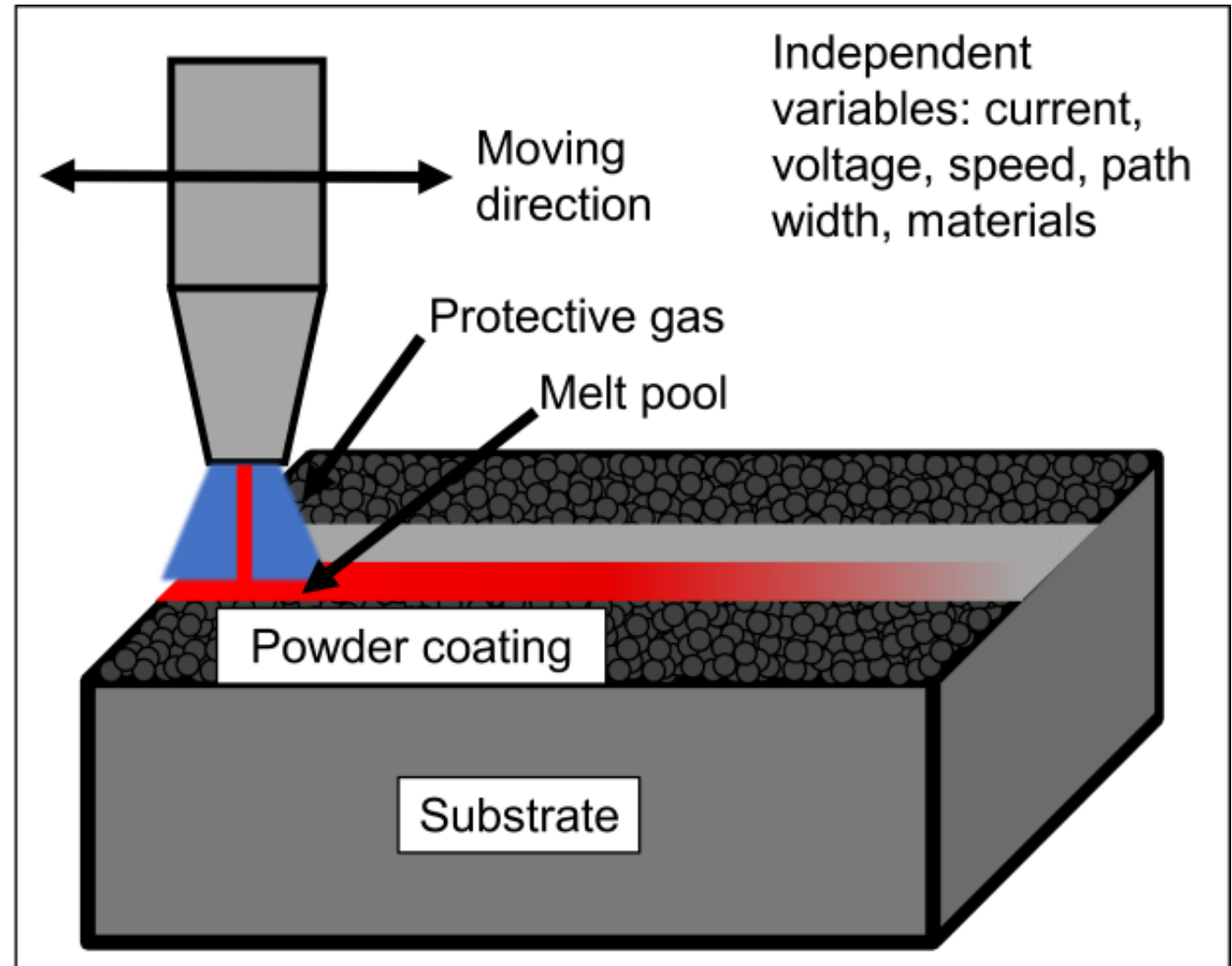


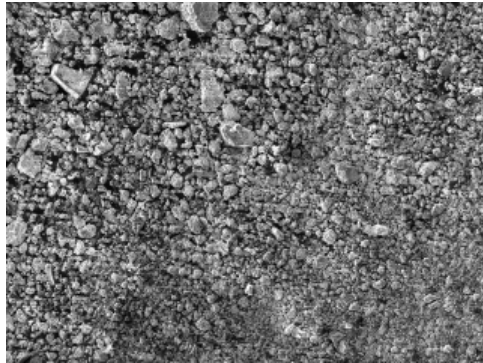
# Flash heating: a new coating method

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

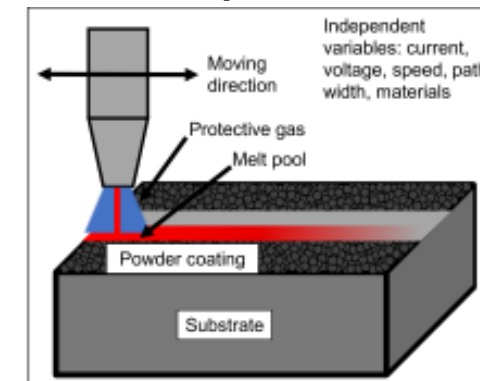


# Design methodology

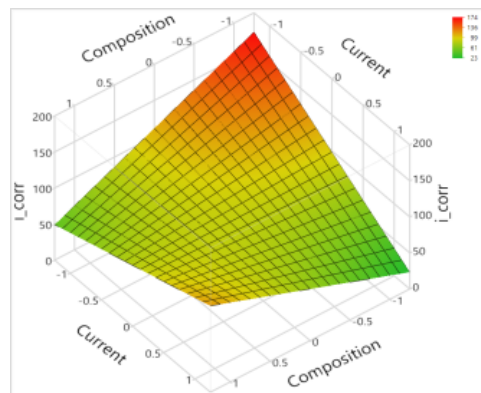
Coating design



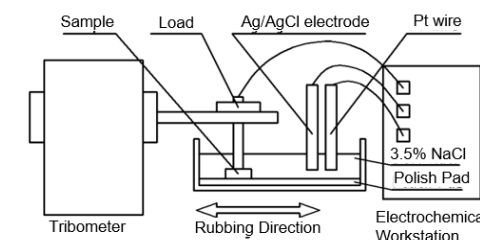
Coating fabrication technique



**High-performance coatings**



Coating optimization



Coating characterization techniques

# Heat dissipates during moving heat source

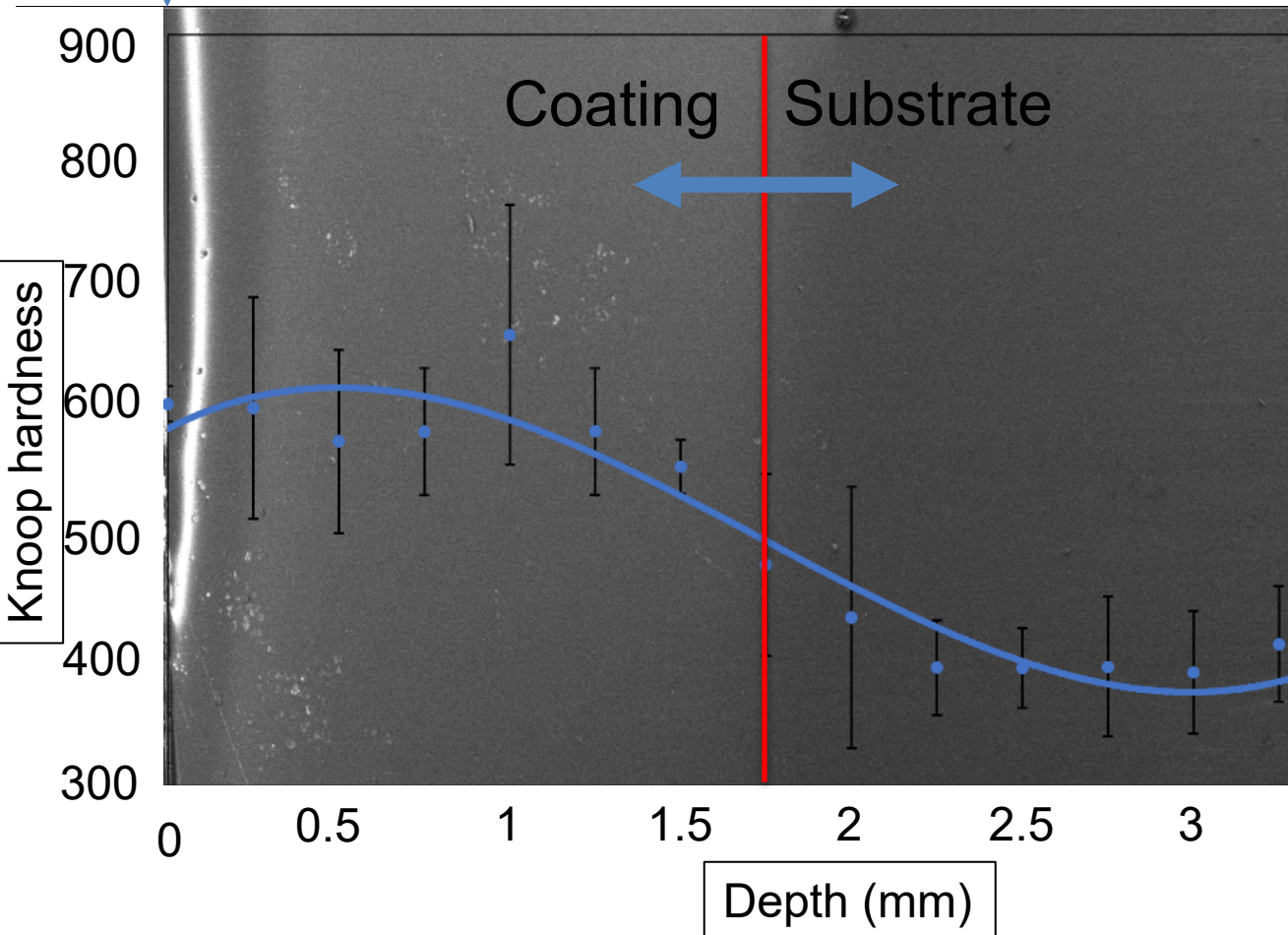


Cross section of coating sample

# High-hardness Ni-SiC coating characterization

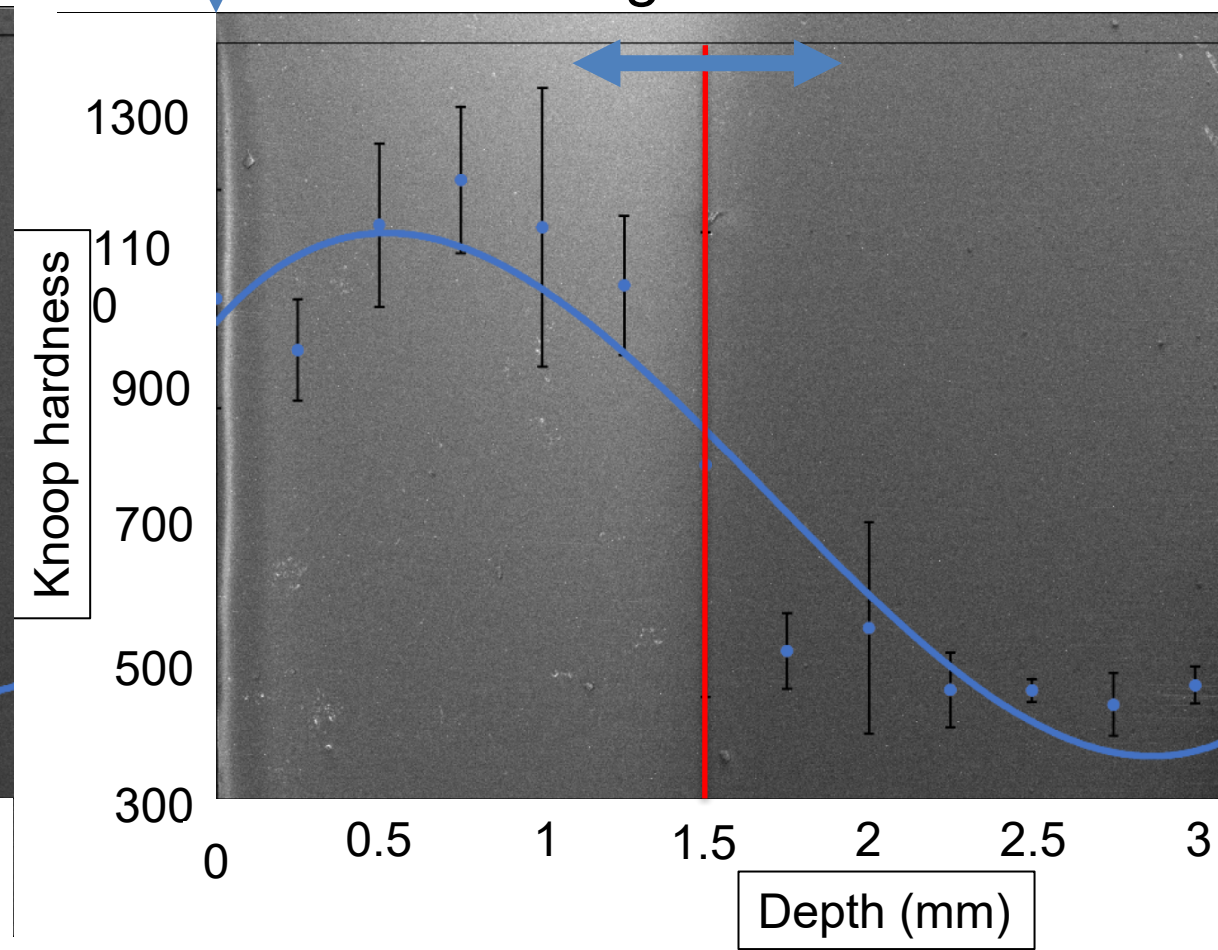
Coating surface

Ni-SiC 70-30



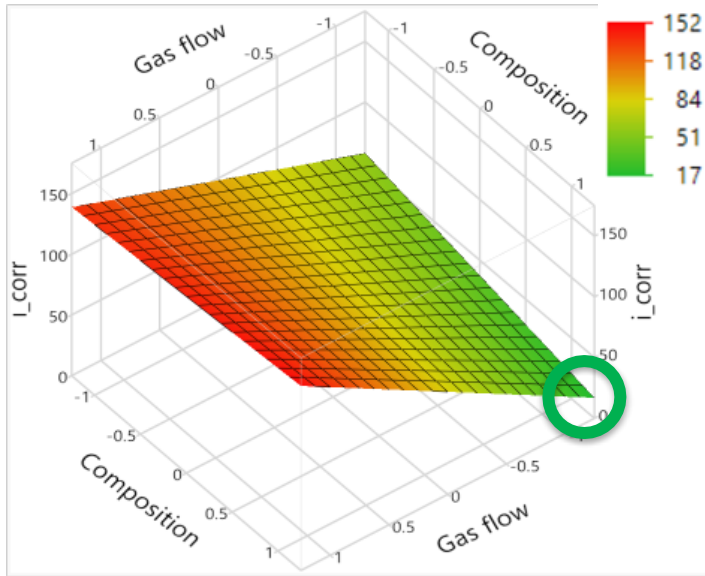
Coating surface

Ni-SiC 50-50



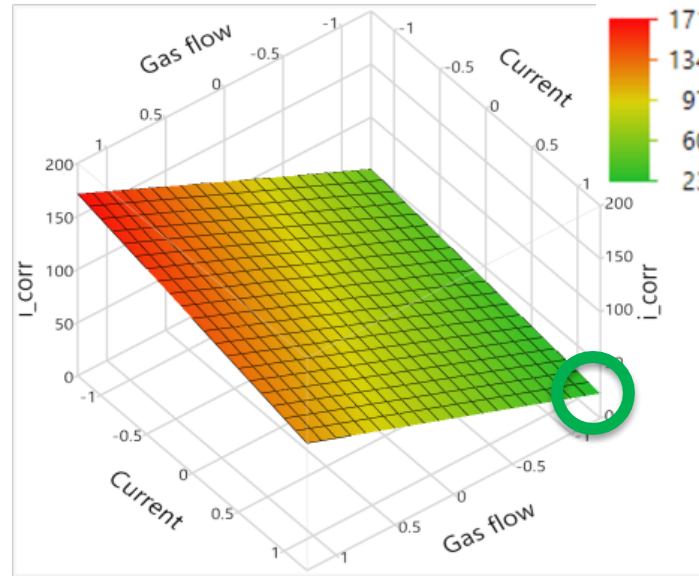


# Optimization of corrosion performance



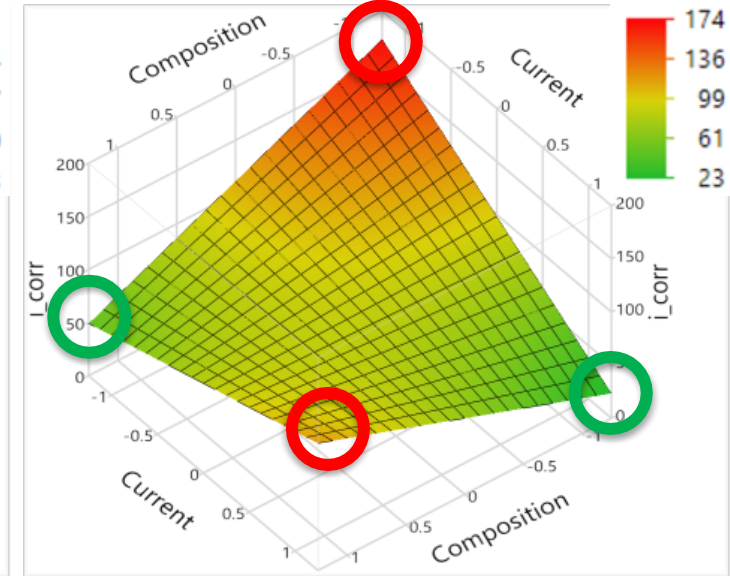
Optimized corrosion performance:

- 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