

Maurizio Vannoni- European XFEL

How can we develop a sustainable process for removing and reapplying X-ray coatings on ultra-precise optical substrates?

European XFEL uses high-value mirrors and gratings made from monocrystalline silicon, typically around 1 meter long, with extreme surface requirements: peak-to-valley shape homogeneity better than a few nanometers and surface roughness below 0.2 nm RMS. These optics are coated with nanometric layers (50–100 nm) of X-ray reflective materials such as B₄C, Platinum, Gold, or Chromium. To improve sustainability and reduce waste, we aim to re-use these components by removing and reapplying coatings without compromising the underlying substrate's ultra-high surface quality. We are looking for expertise in precision surface processing, thin-film removal, and re-coating techniques that can meet these demanding tolerances.