

## **SURFACE STUDIES OF NIOBIUM CHEMICALLY POLISHED UNDER CONDITIONS FOR SRF CAVITY PRODUCTION\***

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### *Abstract*

The surface of polycrystalline Nb etched at different flow rates by 1:1:2 BCP chemical solution was studied morphologically and chemically by profilometry, AFM, laboratory XPS and variable photon energy XPS on the soft x-ray undulator beamline X1B at National Synchrotron Light Source (NSLS) at Brookhaven National Laboratory (BNL). The results show that the different flow rate causes the different surface chemistry. Compared with static solution, the surface Nb<sub>2</sub>O<sub>5</sub> layer is thicker for the owing sample but the surface roughness shows no significant change. The variation of the Nb 3d peaks, which were measured by using variable photon energy XPS, illustrates the power of that approach, and motivates future study.

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