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Type: **Invited Oral Presentation**

## **M2Or3C-01 [Invited]: Connecting Cavity Performance to Physics of the Surface**

*Tuesday, July 23, 2019 3:30 PM (30 minutes)*

Performance of superconducting radio-frequency (SRF) cavities is determined by the property of the material within the first hundred of micrometers from the surface. A general overview of the state-of-the-art surface treatments for SRF application will be presented, highlighting how each treatment change the surface properties, and how that affects the RF surface resistance. Recent R&D findings will be presented focusing on how the controlled introduction of just some ppm of nitrogen within the first 2-5 nano-meters below the surface can drastically change performance of SRF cavities, increasing the maximum reachable accelerating gradient.

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