**1st Webinar Series on Historical Metallurgy**

**Oct 7, 2021, from 7:00 to 8:00 Eastern Time (US and Canada)**

**An in-depth historical presentation on the rise and fall of Monel alloy 400, by James E. Churchill.**

Join from PC, Mac, Linux, iOS or Android: https://meetings.ringcentral.com/j/1488453866?pwd=RlZ6WEtuQURLOGt4R1B5dllsRUJpZz09

Password: 970856



**Bio:**

James E. Churchill is a Funaro scholar of the M.S. Historic Preservation program at the Graduate School of Architecture, Planning and Preservation of Columbia University and an architectural conservator for Kreilick Conservation, LLC. His work has been published in the Nickel Institute technical library, the flagship Advanced Materials & Processes journal of ASM International and the Journal of Metals Magazine. The sitting secretary for a new archaeometallurgical technical committee at ASM International, his work at Kreilick Conservation has enabled him to conserve a number of National Historic Landmarks, including the Athenaeum of Philadelphia and the famed American roadside attraction, Lucy the Elephant in Margate, NJ. An undergraduate of Japanese and Chinese, he is passionate about the juncture of culture, history and material science.

**Abstract:**

An in-depth presentation on the rise and fall of Monel alloy 400, covering the background, mining and marketing of the metal, its subsequent decorative and industrial application, current conservation practice and the first known atmospheric corrosion analysis in over fifty years. Detailing the reasons behind the vacuum of information on this trademarked and now specialty metal, it will offer both a historical and technical component. Beginning with The International Nickel Company and the demand for nickel matériel at the beginning of the twentieth century, it will also cover the discovery of the alloy’s anti-corrosive nature and high mechanical strength, the evolving manufacturing processes, its branding after the war and the aesthetic intent from both the company and fabricator perspective, and the slow discovery of the “fogging” of nickel. The technical component, carried out in the Columbia University Historic Preservation laboratory towards the end of 2019, breaks down the materials science, including composition, various types and finishes of the alloy, and subsequent testing of corroded surfaces with X-ray fluorescence (XRF), X-ray diffraction (XRD), Raman spectroscopy and gas chromatography-mass spectrometry (GC-MS). Imminent tests relating to Monel sheet metal from the Metropolitan Museum roof dating from 1936 will be offered for final discussion.