



## PLENARY LECTURE

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### Linking Powder Diffraction to Art and Conservation: A synergy story Robert E. Dinnebier

During their storage in museums and collections, historical art- and craftworks are exposed to air, moisture and pollutants like acetic acid, emitted from wooden cabinets, for decades and centuries. This leads to various corrosion phenomena, such as: metal corrosion on the metal-glass interfaces or the growth of efflorescence crystals on the surface of calcareous objects. Corrosion of metal, however, can be used purposefully in order to produce historic pigments, like verdigris. Chemical and structural knowledge on the corrosion products is essential for the development of suitable conservation strategies of historical objects. Both samples from museums and synthesized samples from model experiments were used for the investigations. As corrosion products usually don't occur as single crystals, the crystal structures were solved from X-ray powder diffraction while employing vibrational spectroscopy, thermal, elemental and EDX analyses and ion chromatography as complementary tools.

The obtained structural and spectral data significantly extend the basis for the identification and the quantitative analysis of the corrosion products and pigments in museums and art collections worldwide.