

ADVANCED MATERIALS & PROCESSES

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PRESERVING CULTURE



Museum oil paintings just gained new advocates who are using novel testing methods to aid conservators in preserving these cultural treasures. Metal carboxylates known as “metal soaps” mysteriously form on paintings over time and damage the artwork. The phenomenon is most common with paints containing zinc and lead. Researchers at the National Institute of Standards and Technology (NIST) and the National Gallery of Art have teamed up to use infrared-light-based methods to

identify the composition and distribution of the metal soaps. Various spectroscopy techniques such as photothermal induced resonance (PTIR) are used to gain a broader view of the chemical composition across various layers of paint samples. The PTIR method can provide chemical mapping to give conservators information about the initial factors causing the unusual formation and to help with preservation strategies.

In another example of salvaging history, see our Research Tracks page for details on how the U.K. is using materials testing to refurbish a maritime icon, the HMS Victory. The first phase of the project involves extensive control tests on the metal fasteners, caulking, and paint that could be used to restore the 18th century warship. Only the materials proven most weatherproof will be deemed worthy of this royal project.

From the British Isles we take you southwest to Chile, where our lead article offers an archaeometallurgical study of its ancient copper coins. Currency is a tangible artifact of any country’s heritage. Various figureheads, flowers, buildings, and mottos are minted to commemorate and elevate the values of that government. Materials characterization can serve a vital role in analyzing coins by providing insight into the raw materials, process, and equipment used in their minting. The resulting research can paint a rich picture of the culture, the people, and their values that created the coinage.

Our members have been doing a bit of excavating and curating themselves lately. With the return of in-person conferences, our presenters are dusting off their travel bags. More importantly, they mined through the last two years of pandemic-stifled research and selected the gems—their own Mona Lisa’s—to submit as abstracts to our ASM conferences. Many ASM members attended the successful AeroMat event in Pasadena. Next up is the International Thermal Spray Conference in Vienna followed by the International Conference on Shape Memory and Superelastic Technologies in San Diego. You can find show previews for both events in the *iTSSe* and *SMST NewsWire* supplements. And then see page 1 to get jazzed for IMAT in New Orleans this September.

Come to these events for the best-of-the-best research, reclaimed and honed from a global quarantine. Enjoy reviving your professional network. And thank your colleagues, anywhere in the world, who are applying materials science to noble conservation efforts. They are preserving culture—one coin, one ship, and one painting at a time.

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“Gypsy Woman with Mandolin” by Jean-Baptiste-Camille Corot. Courtesy of National Gallery of Art, Washington, adapted by NIST.