

A Materials Research Science and Engineering Center Program Highlight

CCMR Scientists and Microscopes Work to Save the Fading Scream State-of-the-art materials analysis aids art conservationists

Oh, no! The colors in Edvard Munch's iconic masterpiece, *The Scream*, are slowly fading! In order to save this work for future generations, art conservationists must first determine *which* compound is fading and *why*. Using a focused ion beam, researchers at Cornell carefully excised a nano-sliver of paint from the painting and imaged the sliver with their world-leading electron microscopes.

High resolution transmission electron microscopy and X-ray mapping showed the fading yellow paint in *The Scream* to be a mixture of cadmium sulfide, cadmium carbonate, and cadmium chloride particles. Using this information, conservators can better determine how the paint was made and how to better conserve this masterpiece and others from the same period.

(Top) Edvard Munch's 1910 tempera on board version of *The Scream* currently resides in Oslo's Munch Museum. An 1895 pastel version of this same piece recently sold at auction for \$120M.

(Bottom) A nano-sliver of cadmium-based paint taken from the area indicated was studied by high resolution transmission electron microscopy. A color-coded X ray map of the nano-sliver (right) highlights key elements and shows the distribution of the different cadmium compounds in the paint.

