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Picasso at the Nanoscale: The Art of Using Cutting-Edge Science to Understand Cultural Heritage[1]

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Scientists are using high-energy X-ray instruments to solve mysteries behind art masterpieces, including artwork by Picasso. Learn how Argonne National Laboratory is working with major art institutions, such as The Art Institute of Chicago and Smithsonian Institute, to unlock groundbreaking information about art, the artist, and our cultural heritage. A deep connection to our past and shared cultural heritage must be preserved to foster a balanced society where all humanity can thrive. This talk will describe analysis of paint materials used by Pablo Picasso at the nanoscale, as only possible at the brightest synchrotron sources. It will highlight how new imaging techniques can reveal the invisible, bringing to light underlying compositions of old masters' paintings. This in turn enables the writing of new art history and provides important material clues that can assist with attribution and authentication. We will explain how the use of new technology can lead to new discoveries, which, in turn, can change the public's and the specialists' perception of great works of art. In collaboration with scientists from The Art Institute of Chicago we have teamed up to study the chemical make up of zinc oxide pigments used in artworks by Pablo Picasso. We will show how highly focused X-ray beams with nanoscale spatial resolution and trace element sensitivity have helped to determine that Picasso has used conventional house paint in some of his paintings. Surprisingly, the study gives also new insights into the pigment material zinc oxide, which has also great potential in a variety of applications such as in spintronics or as transparent electrodes in solar panels.

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