



Art Conservation *and new technologies*

Last fall, Winterthur/University of Delaware Program in Art Conservation (WUDPAC) second-year Fellow Caitlin Richeson, began a year-long partnership with the San Francisco Museum of Modern Art (SFMOMA). Through this partnership, Caitlin was introduced to an intriguing object that would become the subject of her technical study. *Gemini* (2014), by the artist Neri Oxman, is a chaise lounge designed to provide structural support and comfort and also act as an acoustical chamber offering a stimulation-free environment for thinking.

The chaise is constructed by opposing processes: additive and subtractive. The cherry wood chassis was CNC milled, a process that subtracts material to form the final shape, while the colorful polymeric nodules that line the interior of the chaise were produced using a Polyjet 3D printer, which uses an additive process to build shapes in the round. Polyjet printing is a similar process to inkjet printing, but rather than printing ink, a Polyjet printer extrudes UV-curable plastics in fine layers in between rapid UV light exposure, allowing the complex geometry to build rapidly in the round.

Because Polyjet printing is relatively new, conservators have not yet studied the degradation of Polyjet printed materials, thus ensuring a challenging and engaging technical study for Caitlin. Through scientific analysis, in addition to artist and printer interviews, she gained a thorough understanding of Polyjet printed materials and the complicated artwork, *Gemini*. Her material analysis suggested that Polyjet printed materials should be stable over time, with some aesthetic and mechanical changes to be expected. However, some of the printed nodules on *Gemini* had

changed in color, appearing slightly yellowed. Her research indicated that the yellowing is due primarily to residual printer support material present on the nodules. This material degrades rapidly in comparison to the Polyjet printed nodules and affects their material stability over time.

Caitlin's technical study has included time in the lab doing scientific analysis in an effort to learn more about the properties of the Polyjet printed materials used in the chaise, a study of different types of adhesives used to adhere the nodules to the chaise, and an Oddy test to learn how Polyjet printed materials off-gas and affect other objects in storage. Caitlin looks forward to returning to SFMOMA and treating *Gemini*, but she has also loved the problem solving and detective work that have been part of her technical study. She knows that it is all a good omen of the career that lies ahead of her as an art conservator.



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The University of Delaware's Art Conservation Department educates and trains professional conservators who are well versed in the treatment, analysis, documentation, and preventive conservation of individual artifacts and entire collections. For more news about our students and other department activities visit our web site at www.artcons.udel.edu.

Top: WUDPAC Fellow Caitlin Richeson prepares to adhere a detached nodule. Above: Detailed images of the Polyjet printed nodules. Left: Caitlin examines the condition of Gemini. (Photos: Emily Hamilton and Caitlin Richeson.)