

MCI Weekly Highlight – 28 May 2010

Modern materials, especially synthetic polymers and plastics, had a significant influence on industrial, domestic and cultural life through the 19th and 20th centuries. The Smithsonian's museums and collections are repositories for many different forms of modern materials, from decorative and fine arts in the Cooper-Hewitt and Hirshhorn museums to industrial objects in the National Air and Space Museum and National Museum of American History. Now some of these modern materials are exhibiting signs of deterioration; past exposure to light, heat, moisture, chemical, and gaseous pollutants are reducing their integrity and longevity. The Museum Conservation Institute (MCI) studies modern and industrial materials, such as plastics and space age materials, with the aim of understanding why they are deteriorating and learning how to mitigate the deterioration. Without scientific investigation and new collections care strategies, priceless artifacts from the "Greatest Generation" will be forever lost. This research area relies heavily on advanced analytical instrumentation and imaging techniques in order to uncover how these materials were manufactured and how they will be conserved for future generations. This program supports the Smithsonian's themes of *The American Experience* and *Valuing World Cultures*.

- **Idea Fair proposal on plastics.** MCI Conservator Jia-sun Tsang, with Ann Seeger and other curators from the National Museum of American History, developed a proposal "Plastics: The Material of a Thousand Uses," which was selected by the OUSHAC and presented at the Idea Fair (held March 24) for the Consortium on Celebrating the American Experience, one of the Smithsonian's grand challenges.
- **Grant awarded by National Center for Preservation Technology and Training (NCPTT).** MCI Research Associate Odile Madden and National Air and Space Museum curator Alex Spencer were awarded a grant to study the "Molecular Characterization and Technical Study of Historic Aircraft Windows and Head Gear Using Portable Raman Spectroscopy." The early history of plastics parallels that of aviation, and many advances in manned flight were possible because of innovation in the nascent polymer industry. NASM's encyclopedic collections of early plastics are being studied to understand the composition, processing and current stability of plastic goggles, helmets, and aircraft windows using visual observation and MCI's portable Raman spectrometer.
- **Richard Diebenkorn's *Ocean Park #111*, HMSG.** MCI staff members Jennifer Giaccai, Mel Wachowiak and Marion Mecklenburg are contributing to a study by Hirshhorn Museum and Sculpture Garden (HMSG) fellow Ana Alba on the cracking of *Ocean Park #111*. Giaccai and Alba used infrared spectroscopy and pyrolysis-gas chromatography-mass spectrometry to identify the modern materials used in different layers of the painting -- the "size," ground and paints. They found the thick "size" layer is a very soft and flexible acrylic coating covered with primarily alkyd paints that are much more brittle. In addition, Alba and Wachowiak were able to identify zinc compounds in some of the paint layers, which may increase the brittleness of the alkyd paints. This information contributed to new travel restrictions for *Ocean Park #111* instituted by HMSG.
- **Brian Jungen's *Crux*, NMAI.** MCI conservation and scientific staff, Jia-sun Tsang, Jennifer Giaccai, and Marion Mecklenburg, provided assistance to the National Museum of the American Indian in the conservation and safe display of a large mobile by Brian Jungen, composed of a rowboat and five animals made from plastic luggage, in the newly opened exhibit "Strange Comfort." Technical study showed that the suitcases were made of polypropylene, acrylonitrile-butadiene-styrene, and polyurethane foam; phthalate plasticizers were identified in the polymers. The outcome of the project was to address concerns about possible stress on mobile components from the hanging mechanism and to develop a preventative care plan. The project was presented at the American Institute of Conservation annual meeting in Milwaukee, WI on May 13 and will also be presented at the international symposium "Contemporary Art: Who Cares?" in the Netherlands on June 8-11.