COOPER HEWITT
Smithsonian Design Museum

Mellon Foundation

NYU | THE INSTITUTE OF FINE ARTS



James Hughes
2024 Graduate
The Institute of Fine Arts
New York University
jamesreadhughes@gmail.com


Sarah Barack
Senior Objects Conservator
Cooper Hewitt, Smithsonian
Design Museum


Jessica Walthew
Conservator
Cooper Hewitt, Smithsonian
Design Museum


# PLASTICS

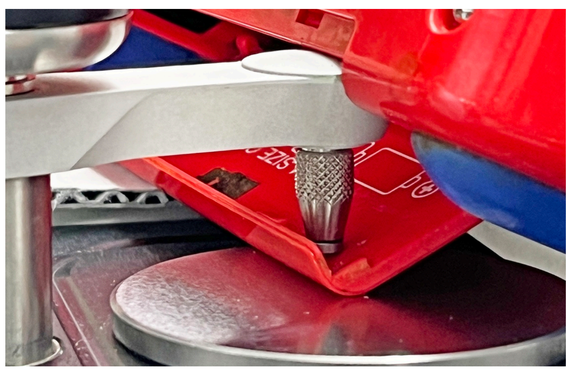
## BACKGROUND

This poster summarizes the results of an internship focused on plastics identification at Cooper Hewitt, Smithsonian Design Museum in New York City.

This project follows up on an extensive survey begun in 2011. My goal was to more accurately identify a selection of plastics in collections objects and deepen my understanding of the types of polymers typically found in art and design museum collections.

## METHODS


- No sampling of collections objects
- 37 collections objects and 58 reference samples were analyzed using a Thermo Scientific Nicolet iS5 FTIR-ATR
- Most objects were analyzed using 16 scans; some objects, (e.g., those containing foam), were scanned up to 120 times
- Spectra were cross-checked with polymer databases (e.g., HR Nicolet Sample Library, HR Hummel Polymer and Additives, HR Spectra Polymers, etc.)
- Findings were recorded as reports in The Museum System (TMS)



## CHALLENGES

- Objects' geometry (flanges, hinges, etc.) and materiality (glossy, spongy, etc.) can affect efficacy of FTIR-ATR analysis
- Database matches not always reliable or available per the complex polymer "soups" of additives
- Potential to leave dents/mar surfaces

## BINGO


A **BINGO** card reflects both the breadth of polymers in the collection as well as the variety of manufacturing processes.

**Scan the QR code** to be taken to a mini-website for this project. Your data will not be collected and you won't receive ads for any goods or services (we promise).

## IN PRACTICE: A THREE-PRONGED APPROACH TO POLYMER IDENTIFICATION

This project reflects the intricate processes at play when identifying polymers in growing and aging art and design collections.

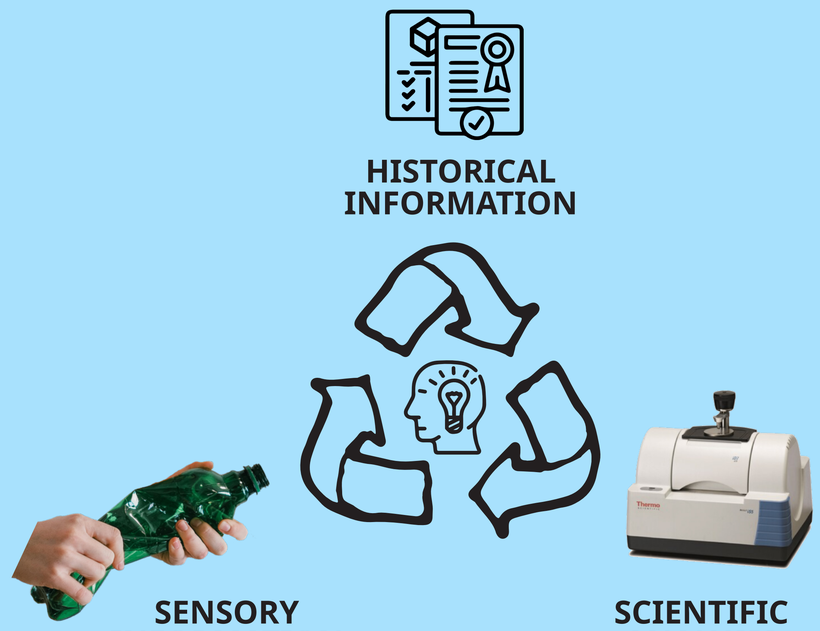
We found that triangulating identifications based on a **THREE-PRONGED APPROACH** can help cultural heritage professionals with varying access to equipment to better care for their collections. This practice is based on three sources of information:

- **Sensory information** (surface quality [waxy, smooth], smell [acidic, sweet], etc.)
- **Scientific analysis** (FTIR-ATR, etc.)
- **Historical information** (patents, manufacturer's specifications, etc.)

## NEXT STEPS

Compiling a **design-oriented polymer identification kit** which includes samples of natural plastics, thermoplastics, thermosets, and elastomers (and, where possible, degraded samples) gave me a hands-on opportunity to familiarize myself with the sensory properties of polymers. If this kit is something you feel would add to your library, please get in touch!

### A THREE-PRONGED APPROACH TO POLYMER IDENTIFICATION





## ACKNOWLEDGEMENTS

The authors would like to thank Cooper Hewitt, Smithsonian Design Museum's Product Design and Decorative Arts Curatorial Department and the Conservation Department. Equipment funding was provided by the Smithsonian Research Equipment Pool. Financial support was provided by The Institute of Fine Arts, New York University and the Mellon Foundation.

The typeface used in the title is called ***Bungee***. It was designed by David Jonathan Ross.


## REFERENCES


- Shashoua, Yvonne. *Conservation of Plastics*. Abington, UK: the Taylor & Francis Group, 2008.
- van Oosten, Thea. *Plastics: A Guide for Conservators*. Los Angeles: The Getty Conservation Institute, 2022.
- Waentig, Friederike. *Plastics in Art: A study from the conservation point of view*. Petersburg: Fulader Verlagsanstalt, 2008.


aic american institute for conservation
Preserving Cultural Heritage