

## Analyzing VOCs in museums: from the Ruby slippers to exhibition cases



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In the field of cultural heritage, there is a growing interest in techniques to detect volatile organic compounds (VOCs) that can provide information about the following questions: (i) What VOCs are in the collection environment?, (ii) What VOCs do the collection objects themselves emit?, (iii) How does the composition/previous storage/previous conservation treatments of these objects effect the VOCs emitted? In this project we have developed and implemented a methodology to investigate the off-gassing of different types of matrices (plastics, leather, resins, etc.) inside display cases and storage facilities by means of solid phase micro-extraction gas chromatography mass spectrometry (SPME-GC-MS). SPME-GC-MS is a fast, reliable, and non-destructive technique. However, it has some limitations in detecting VOCs (high volatility compounds, low affinity for the fiber coating, incompatibilities with the instrumentation, etc.). This presentation will cover a number case studies we have carried out with this technique to analyze construction materials and environments for exhibition cases, complex collection objects such the Ruby Slippers, and also binding media for contemporary colorants. In each case study, the detected VOCs allowed scientists and conservators to make informed decisions while selecting exhibition materials or understand where material incompatibilities might exist.

# MCI

## *Topics in Museum Conservation*

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*MCI Theater*

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