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A Conversation with Eric Breitung

Erika Gebel Berg

The conservation expert applies his knowledge of chemistry and materials science to preserving works of art.

Eric Breitung is a Ph.D. chemist at the Metropolitan Museum of Art. Since moving into the world of art conservation after a job in industry, he has studied the dye chemistry of central Asian textiles, worked to find new ways to test degraded audio tapes for playability, and devised better coatings for silver museum pieces—all using analytical techniques and other chemical lab methods. He spoke with Erika Gebel Berg about his latest endeavor: working to make museum building spaces chemically compatible with the art they display.

How did you end up in this field?

I had a good job at General Electric, applying chemistry to problems that GE was having with their products or their materials, focusing on thin films and coatings in their plastics division. For personal reasons, I was interested in moving to New York City and was having a difficult time finding chemistry jobs. I was looking in C&E News, and my current boss at the Met had advertised a position there. That is really the first time I had heard about this field. But I had no idea that they would ask for museum experience, and that was my boss's excuse for not hiring me at that time. I asked him if I could apply for a fellowship, and he was probably surprised that I was willing to leave my well-paid industrial position for what was a low-paying internship in a very expensive city. But I went for it.

What did you do during this fellowship?

I applied my thin films and coatings experience from GE to face-mounted photographs, which are these large-format, colored prints where the photo color side is glued to a sheet of Plexiglas. If anything happens to the Plexiglas you have to somehow figure out how to smooth the scratch. The question was, "Can we make a sacrificial layer that can be put on the outside of these things that would allow them to be cleaned by people who do not know how to clean them—where if they accidentally scratched them, they would scratch the sacrificial layer?"

After that, you worked at the Smithsonian and Library of Congress, in Washington, DC. How did you come to work on buildings instead of art pieces?

While I was at the Library of Congress, I did materials testing and paper degradation studies. I asked questions like, "Are you degrading the paper more over a 20- or 40-year period if you store the paper in this protective foam versus this other foam?" I basically have taken that kind of work and brought it to the Met, but looking at the entire envelope of the building. I look at all the building materials, all of the case materials that we use to house the art, the storage materials, the transportation materials—as well as think about the heat and humidity in all those situations and what the safest conditions are. How do we monitor that in an effective and inexpensive way?

How do you know how a material is likely to affect a piece of art over the long term?

The field has, for around 25 years, used a surrogate test, where they'll take a material they want to use, put it in a jar along with small pieces of several metals, and let this sit for 30 days in an oven at 60 °C. They then look to see if those metals have corroded any more significantly than in a jar

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with nothing else in it. People find it very difficult to get reproducible data. Also, the test relates to how you consider storing metal objects, coins or bronzes, but may not be as indicative of what you should be doing with your paper objects. So there's a movement now to use solid phase microextraction mass spectrometry and evolved gas analysis mass spectrometry to see what potentially damaging chemicals are coming off these materials. Examples would be formic acid or acetic acid evolving out of a piece of composite board. I'm developing these methods to replace that surrogate test method—and to expand this to materials other than metal, like paper or bone. But we have limited resources. We are trying to come up with processes that give useful information but do not go overboard.

What do you like about this career?

People talk about the psychology of being around art and things that might inspire creativity, and I really feel like it is true. There are places that I've worked where all the walls are painted white, and it is not an exciting, inspirational place to work. The people I work with here are really interested in keeping the art around for future generations. It is kind of great being around that.

Notes

Updated March 30, 2016, to correct the textile origin and the nature of the museum internship.

Erika Gebel Berg is a freelance contributor to Chemical & Engineering News, the weekly news magazine of the American Chemical Society. Center Stage interviews are edited for length and clarity.

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