

POLLUTANTS: LIBRARY OF CONGRESS TO EMBARK ON RESEARCH

THIS FALL, A FELLOWSHIP FOCUSING ON ZEOLITES
AND THEIR ROLE IN PROTECTING AGAINST DEGRADATION WILL BEGIN.

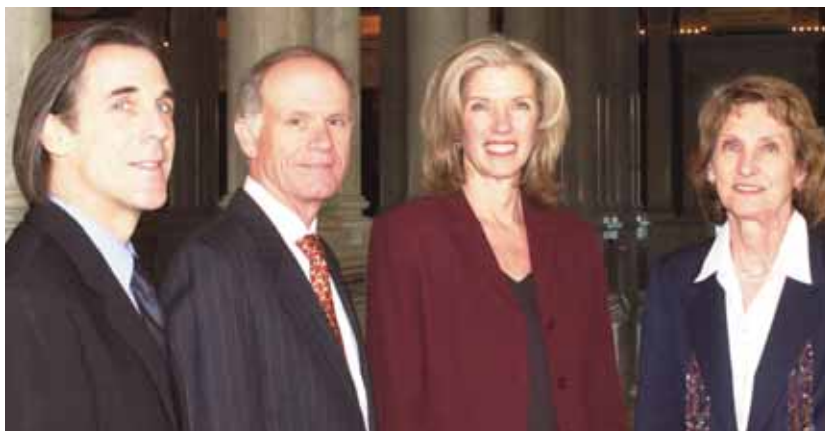
by Anne Vazquez

For many years, The U.S. Library of Congress has been a vital source of information for those who have a stake in preserving items of all kinds. For many years, the LOC has developed specifications for the preservation and housing of items in its vast collections. These specifications outline the requirements for the materials that are used to protect the over 120 million items, that are in the library care, from past and future degradation. Classified into eight categories (paper stock, card stock, board stock, matboard, polyester, corrugated board, label stock, and other mediums such as stainless steel cans for film preservation), these specifications are the result of timely and measured research performed by the library's conservation staff.

An upcoming research project at the library may result in a new specification for the LOC. This fall, the library will embark on a study that will examine the potential benefits of using materials with molecular sieves (or, zeolites) in its preservation efforts. Zeolites are molecular sieves that have been found to actively scavenge pollutants in its environments, therefore slowing degradation of items in its surroundings. A fellowship has been established to perform the research at the library, in which a scientist—yet to be chosen—will conduct studies on the effects of zeolites on the long-term stability of library materials. The results of the research will then be used in developing practical applications for the technology within the library.

Mark Roosa, director for preservation at the LOC, explains that the library approaches the preservation process from two standpoints—remedial and preventative. In recent years, the latter approach has increasingly become the focus of the preservation staff there. "For the past five years or so, we've been focusing more and more on the notion of preventative conservation activities," he says. "I think everyone agrees that your money is much better spent if you can do a lot of preventative work, as opposed to remedial work later."

"As the preventative approach has been a driver in



Mark Roosa (far left), director of preservation at The Library of Congress in Washington, DC, looks forward to discovering potential preservation uses for zeolite technology at the LOC. Seen here with Jack Forbes (on left), president of Nielsen Bainbridge, Barbara Sommer (center), also of Nielsen Bainbridge, and Deanna Marcum, associate librarian for library services at the LOC. Nielsen Bainbridge is participating in sponsoring the upcoming research.

our program these last few years, I began to wonder what else was out there that could help us with our work," recalls Roosa. "I had read about molecular sieves, the zeolites, and had spoken with a few of the companies working with this technology." And later, after learning of research being conducted at The Getty Conservation

Institute in Los Angeles, Roosa further considered a study on zeolites.

Jim Druzik, senior scientist at The Getty, had been studying pollutants and their effects on items in enclosed environments. He examined close to 20 different materials, including active carbons, clays, and several zeolites to gauge their effectiveness in absorbing acetic acids and other pollutants. Druzik's approach was to expose the absorbents to acetic acid gas [a major agent of degradation] and then observe the absorption capacities of each. Among his findings was that active carbon and a zeolite, called SPZ, were the most effective in absorbing the pollutants. In addition, the SPZ was a top performer in maintaining a white, clean appearance after absorbing the acetic acid.

As research institutions, members of the LOC and The Getty have long held a mutual respect for each other's work. So as Roosa began to pursue the idea of looking at pollutants and the absorbents that may be used to combat their effects, he contacted Druzik to discuss a collaboration.

In speaking of his research, Druzik explains, "I was interested in one particular zeolite, the SPZ, along with other absorbents for use in display cases. The SPZ was of particular interest because it had been getting so much attention." He notes that his research examined the various absorbents in their standalone form, as opposed to as part of another entity—a sheet of paper, for example. "The LOC fellowship will include focusing more on the performance of this material in paper. As an expert on

the physical chemistry of the adsorption, I think that will be where I benefit this group."

Planning for the fellowship to begin, Roosa says, "We are interested in seeing what the research at The Getty shows. Jim [Druzik] and his colleagues have done most of the primary research and we will be looking at that closely. From that, we will look at our own situation at the library and the types of materials we work with here. And we will look to see if there is a good match between the findings and potential applications for the LOC. We have materials that are actively deteriorating. This research will enable us to evaluate zeolite technology and to see if it has practical applications at the library. In a sense, if you put zeolite "wrapper" around anything that is actively deteriorating, presumably you can slow down the deterioration rate. And that's what we're really interested in—slowing down the deterioration."

The LOC fellowship is being funded by Nielsen Bainbridge, reflecting the company's interest in furthering the research into zeolites and how this technology can be utilized in the picture framing industry. "Nielsen Bainbridge has been a supporter of the library for years and has always been interested in what we do here," says Roosa. "So when we explained our interest in further researching zeolites, we [at the library] realized it would be a good fit for them to support the fellowship."

The Nielsen Bainbridge Artcare matting products contain the zeolite technology. Jack Forbes, president of Nielsen Bainbridge, notes that the library's findings will

be of interest to the company in terms of continuing to make a product that provides a high level of protection against pollutants.

An advisory committee has been created to not only review applications and make the final selection, but also work with the scientist chosen throughout the research. While Roosa will oversee the project, there are three members of the committee. These include two research scientists at the LOC—Bert vanZelst and Chandru Shahani, as well as Druzik.

While it remains to be seen what the library's research will confirm, or discover, about the potential of zeolites for preservation, Druzik says that the collaboration between The Getty and the LOC is a natural fit. "The number of large institutions in the western hemisphere that are pursuing conservation research is not that many. Partnering is a great opportunity. And whatever results from this project, The Getty will be very proud to have participated."

Roosa notes that at the end of the fellowship period, he expects that research on this topic will continue at the library. And as the staff there determines what role zeolites will play in preservation efforts there, specifications outlining its applications may be created. "Once we reach that point," says Roosa, "this information will then be disseminated. It is our hope that the findings will have a broader resonance in the larger [preservation] community."

For more information on the Library of Congress, and its specifications, visit www.loc.gov/preserv. ■