

'Smell of old books' offers clues to help preserve them

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Old books give off an unmistakable, musty odor that scientists can use to assess the book's condition. Credit: Wikimedia Commons

Scientists may not be able to tell a good book by its cover, but they now can tell the condition of an old book by its smell. In a report in ACS' *Analytical Chemistry*, a semi-monthly journal, they describe development of a new test that can measure the degradation of old books and precious historical documents based on their smell. The nondestructive "sniff" test could help libraries and museums preserve a range of prized paper-based objects, some of which are degrading rapidly due to advancing age, the scientists say.

Matija Strlic and colleagues note in the new study that the familiar musty smell of an old book, as readers leaf through the pages, is the result of hundreds of so-called [volatile organic compounds](#) (VOCs) released into the air from the paper. Those substances hold clues to the paper's condition, they say. Conventional methods for analyzing library and archival materials involve removing samples of the document and then testing them with traditional laboratory equipment. But this approach destroys part of the document.

The new technique, called "material degradomics," analyzes the gases emitted by old books and documents without altering the documents themselves. They used it to "sniff" 72 historical papers from the 19th and 20th centuries, including papers containing rosin (pine tar) and wood fiber, which are the most rapidly degrading paper types in old books. The scientists identified 15 VOCs that seem good candidates as markers to track the degradation of paper in order to optimize their preservation. The method also could help preserve other historic artifacts, they add.

[More information:](#) "Material Degradomics: On the Smell of Old [Books](#)", [Analytical Chemistry](#), [pubs.acs.org/stoken/presspac/p ...](https://pubs.acs.org/stoken/presspac/p...)
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