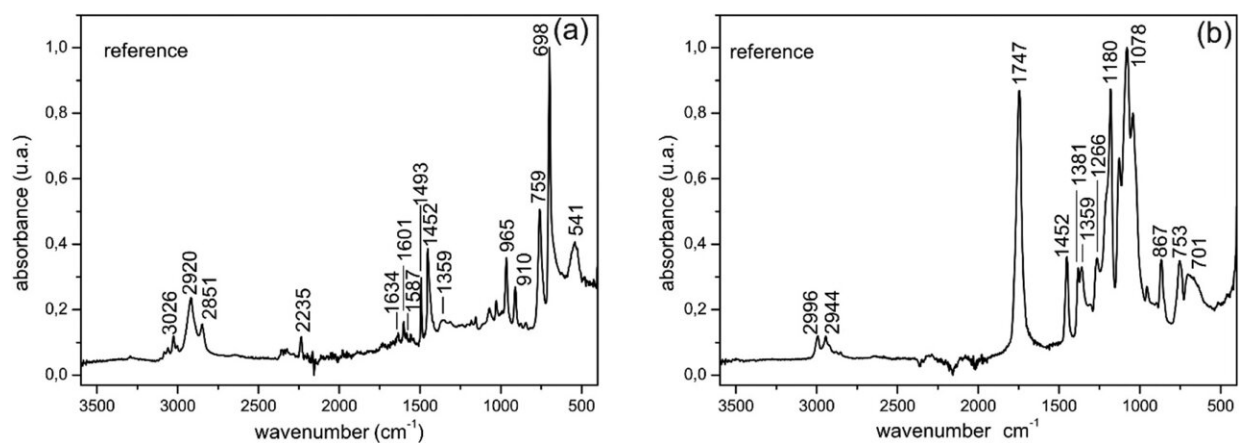


Researchers test 3D printing materials used for art projects to see if they will stand the test of time

January 3 2023, by Bob Yirka



Reference FTIR spectrum of ABS (a) and PLA (b). Credit: *Journal of Cultural Heritage* (2022). DOI: 10.1016/j.culher.2022.12.005

A team of researchers at Universidad Complutense de Madrid, has tested two of the most popular materials used to 3D print useful objects, including those used for art projects, to see how well they might stand the test of time. In their paper published in *Journal of Cultural Heritage*, the group describes subjecting 3D printed objects to heat and UV radiation.

The researchers began by noting that many of the materials used to

create art objects in the past have shown strong resilience to the passage of time. For instance, drawings on rocks made thousands of years ago, or sculptures and paintings made hundreds of years ago, are still around today. They then noted that many future art objects may be created using 3D printing, which got them to wondering if such objects may last as long as more traditional media.

To find out, they tested two of the main materials currently used to print 3D objects: [polylactic acid](#) (PLA) and [acrylonitrile butadiene styrene](#) (ABS). Testing involved applying two of the main things that lead to degradation of materials—heat and UV radiation—in an accelerated way.

The researchers placed 3D-printed objects (along with some samples of the "ink" used to print the objects) in an oven and heated them to different temperatures over different time periods. They did the same with objects placed in a chamber that emitted different amounts of UV radiation. They also subjected some of the objects to both tests.

The researchers found that both types of materials underwent some degree of chemical change, though PLA tended to do better. They also found that ABS tended to lose more of its color and lost more of its [structural integrity](#) than PLA. The researchers suggest that art objects made with current 3D-printing technology are not likely to last as well as more [traditional materials](#). They plan to continue their work by testing other materials and other stressors.

More information: Margarita San Andrés et al, Use of 3D printing PLA and ABS materials for fine art. Analysis of composition and long-term behaviour of raw filament and printed parts, *Journal of Cultural Heritage* (2022). [DOI: 10.1016/j.culher.2022.12.005](https://doi.org/10.1016/j.culher.2022.12.005)

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