

Scientists unveil historical clues to Stradivari's craft

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Scientists from the Università degli Studi di Pavia in Italy used a range of analytical methods to identify the techniques used by violin master Antonio Stradivari. The owner of the top plate is Charles Beare. Credit: Marco Malagodi and Claudio Canevari

A new study, by Marco Malagodi from the Università degli Studi di Pavia in Italy and colleagues, uses a range of analytical methods to identify the techniques used by violin master Antonio Stradivari in the 17th century, and attempts to replicate his craftsmanship. The work is published online in Springer's journal, *Applied Physics A - Materials Science & Processing*.

Antonio Stradivari is universally recognized as one of the most famous [violin](#) makers in the world. During his life, he and his apprentices built more than a thousand violins, violas, cellos and other stringed instruments. The importance of Stradivari's work lies in his craftsmanship, the quality of the materials used and the finishes on the instruments' surfaces. The sound of a violin is a result of the combination of the materials used e.g. wood species and varnishes, the construction technique and the skill of the maker.

Malagodi and team used a range of different diagnostic techniques to identify the characteristics and composition of the materials in an original violin top plate, made by Antonio Stradivari. They also studied surface coatings and decorations.

Their analyses revealed the absence of varnish layers on the surface of the top plate as a result of extended and excessive restoring. They also identified the dye used for the black layers of the purflings, and the characteristics of the black and white elements of the decorations, which confirmed that Stradivari used ancient techniques of wood coloring.

The researchers then copied the top plate based on their discoveries, using materials similar to those identified on the original Stradivari. They carried out the same detailed analyses for comparison.

The authors conclude: "Our investigations have provided several important insights about the manufacturing techniques of Antonio

Stradivari and allowed us to hypothesize about the recipes used by this violin master, or by his suppliers, to decorate his instruments. These findings represent an important step in the study of the materials used by violin makers during the second half of the [17th century](#) in Northern Italy."

More information: Malagodi M et al (2013). A Multi-Technique Chemical Characterization of a Stradivari Decorated Violin Top Plate. *Applied Physics A- Materials Science & Processing*; [DOI 10.1007/s00339-013-7792-2](#)

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