

# The use of X-ray fluorescence imaging for the distinction of iron-gall ink inscriptions on artefacts from Stradivari's workshop

Marie Radepont<sup>(1)</sup>, Oulfa Belhadj<sup>(1)</sup>, Hortense de la Codre<sup>(1,2)</sup>, Jean-Philippe Echard<sup>(1,2)</sup>, Stéphane Vaiedelich<sup>(1,2)</sup>, Véronique Rouchon<sup>(1)</sup>

(1) *Centre de Recherche sur la Conservation, Muséum national d'Histoire naturelle, Ministère de la Culture, CNRS, 36 rue Geoffroy Saint-Hilaire, 75005 Paris, France.*

(2) *Musée de la musique, Cité de la musique - Philharmonie de Paris, 221 avenue Jean Jaurès, 75019 Paris, France.*

Among its collection, the Musée de la musique in Paris holds thirteen wood forms and templates from the workshop of the instrument maker Antonio Stradivari (active 1666-1737 in Cremona). All these pieces present handwritten inscriptions such as dates, capital letters, and numbers that might be linked to authenticated inscriptions on others Stradivari's artefacts from the Museo del Violino in Cremona [1]. Curators are searching for any information that could lead to the identification of authors of these writings.

A recently acquired X-ray fluorescence (XRF) scanner was used to characterize these inscriptions. All are iron-gall inks and the main elements detected are iron, copper and zinc. Differences in inter element ratios leads to identify six different ink compositions on the whole corpus. Next to the elemental information obtained by this method, imaging allowed cutting the results off ink and matrix heterogeneity and reading lost inscriptions.

Next to the presentation of the main results, the advantages of XRF imaging in this study, parameters for acquisition and data processing will be discussed.



**Figure.** a) picture of a wood pattern under the measurement head of the XRF scanner; b) visible image of an inscription; c) XRF cartography of iron (in white scale) showing the number “4”.