

# Can We Look over the Shoulders of Historical Brasswind Instrument Makers?—Aspects of the Materiality of Nineteenth-century Brass Instruments in France

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*This paper reports on a multidisciplinary research project into the materiality of brasswind instruments, in which chemical analyses, metallography, electron backscatter diffraction (EBSD), wall-thickness measurements, and neutron and X-ray tomography were applied. It presents in a condensed form summary results and conclusions drawn from the project. Full details are published in conference proceedings including papers of the present authors and those by Jean-Marie Welter, Wolfram Schillinger, Cyril Grenot, Edward H. Tarr, and Rainer Egger.<sup>1</sup>*

## Introduction

The activities of several instrument makers in nineteenth-century France mark a high point in the history of brass-instrument production. The names of just a few of the foremost craftsmen of this great era include Raoux, Labbaye and Millereau, the Courtois family, Gautrot, Sax (all in Paris), Kretzschmann (Strasbourg), Müller and Tabard (Lyon). A large number of their instruments have been preserved. They are well known from a musical and organological point of view, but many technical details of their manufacturing techniques are still uncertain. Unfortunately, the artisans themselves remain silent, as almost no primary source material apart from the instruments themselves has survived.

A highly multi-disciplinary research project within the context of experimental archaeometallurgy has uncovered some of their secrets. It was carried out by the Bern University of the Arts (direction, musicology) in collaboration with the Swiss Federal Laboratories for Materials Science and Technology (metallography, ED-XRF) and the Paul Scherrer Institute (metallography, neutron and X-ray tomography). Of paramount interest were questions regarding materiality and working techniques. The goal was to support the “historically informed” production of replicas by the Egger brass instrument workshop in Basel. For this purpose research on the following themes was undertaken:

- for the reproduction of brass sheets, the chemical composition of the historical instruments as well as sheet thickness had to be known.
- for the production of replicas, knowledge of original working techniques (e.g., annealing temperatures) had to be discovered.
- for copying the original geometry, internal dimensions of the historic instruments were needed.