Characterization of pre-Columbian South American gold wires
Vanessa Muros, Sebastian Wärmländer, David A. Scott
UCLA/GETTY Conservation Program

ABSTRACT

In this study, ancient gold wires and other gold objects from the Colombia region were analyzed by synchrotron µXRF and µXAS at the Stanford Synchrotron Radiation Lightsource (SSRL) and by energy-dispersive X-ray spectroscopy (EDS) and energy-dispersive X-ray fluorescence (EDXRF) to understand their manufacturing and composition. Gold wires from various sites reveal differences in composition and manufacturing techniques. The results show that these gold objects are composed of native gold or gold alloys, some of which are decorated with inlay techniques. This study provides insights into the manufacturing and compositional techniques used in pre-Columbian South America.

INTRODUCTION

Gold wires from the Calima region have been found in various archaeological sites in Colombia. These wires are typically made from gold that has been obtained through placer mining, and they are often decorated with inlay techniques. This study aims to understand the manufacturing and compositional techniques used in the Calima region.

THE GOLD OBJECTS

A total of 17 gold wires were analyzed from various sites in the Calima region. Nine of these wires were analyzed by synchrotron µXRF and µXAS at the Stanford Synchrotron Radiation Lightsource (SSRL), and the remaining eight were analyzed by energy-dispersive X-ray spectroscopy (EDS) and energy-dispersive X-ray fluorescence (EDXRF) at the UCLA/GETTY Conservation Program.

THE WIRE MANUFACTURING

One particular feature of gold wires is that they are made from fine gold, which is often used in the creation of inlay techniques. In this study, the wires were analyzed to understand the manufacturing techniques used in the Calima region.

ELEMENTAL COMPOSITION

The elemental composition of the gold wires was analyzed by synchrotron µXRF and µXAS (Figure 7). The results reveal that all of the wires are composed of a single phase of gold, with no significant variations in composition. The wires exhibit a range of compositions, with some containing small amounts of other elements, such as silver and copper.

References: