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BOOK OF ABSTRACTS

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**Archaeological gold identification using
MICRO-PIXE and MICRO-SR-XRF**

**Bogdan CONSTANTINESCU⁽¹⁾, Angela VASILESCU⁽¹⁾, Martin RADTKE⁽²⁾,
Daniele CECCATO⁽³⁾ Dana POP⁽⁴⁾ and Corina IONESCU⁽⁴⁾**

⁽¹⁾ *“Horia Hulubei” National Institute of Nuclear Physics and Engineering, PO BOX MG-6, Bucharest 077125, Romania*

⁽²⁾ *Bundesanstalt für Materialforschung und –prüfung (BAM), Fachgruppe Nuclearanalytik, Unter den Eichen 87, D-12205, Berlin, Germany*

⁽³⁾ *Istituto Nazionale di Fisica Nucleare, Laboratori Nazionali di Legnaro, Padova, Italy*

⁽⁴⁾ *Faculty of Geology, Babes-Bolyai University, Cluj-Napoca, Romania*

Several small fragments of archaeological objects and of Carpathian gold were studied using micro-PIXE technique at the Legnaro AN2000 microbeam facility, and micro-SR-XRF at BESSY synchrotron. The goal of the study was to identify the trace elements, especially Sn, Sb and Te. For Visigothic Pietroasa “The Golden Brood Hen with Its Chickens”, we found Sn in the Oenochoe cup and small fibula, indicating that alluvial gold - probably from Anatolia - was used. We also detected Ta inclusions in the large fibula, indicating that Ural Mountains (the only region where Ta and Au minerals are together) gold was (at least partially) used. No Te, Sb or Pb traces were detected, indicating that Carpathian gold was not used. A spectacular application to eleven spiraled Dacian gold bracelets authentication is presented. The bracelets were measured using XRF technique (Am-241 source and a portable Mo X-Ray tube to control the homogeneity). Compositions (Au-Ag-Cu) very similar to Brad region native gold (primary and placers) – but different from bracelet to bracelet - were obtained, comparing with the results of micro-PIXE and micro-SR-XRF experiments on native Carpathian gold. Traces of Sn and Sb were detected. Our conclusion: native gold (mainly placers), primitive metallurgy (no refined gold).