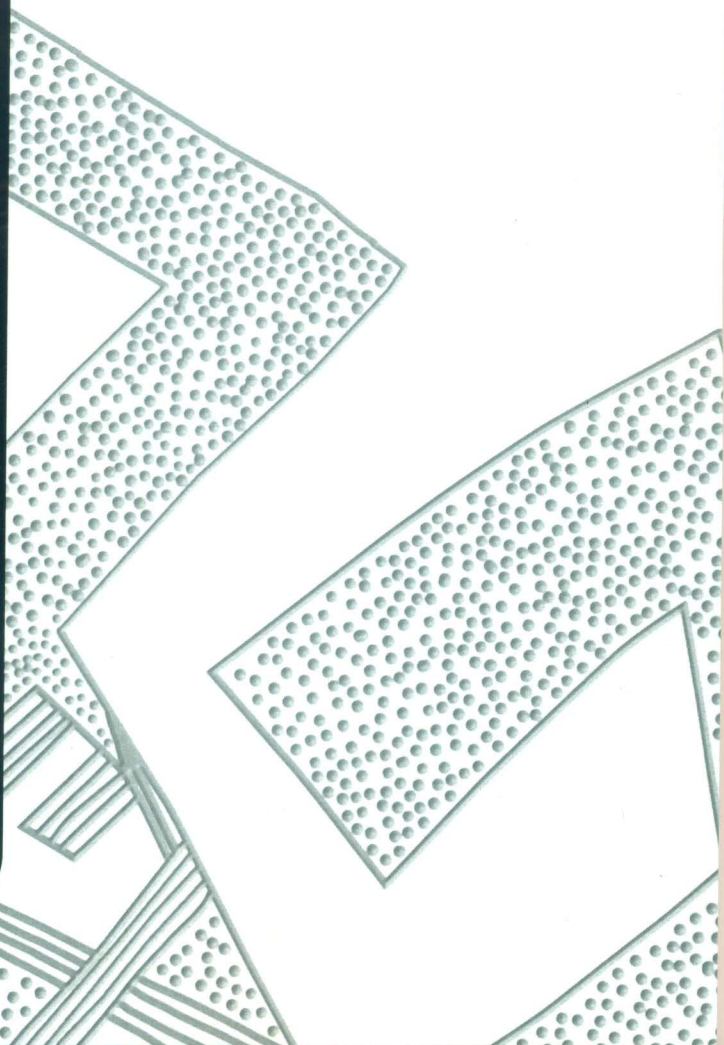
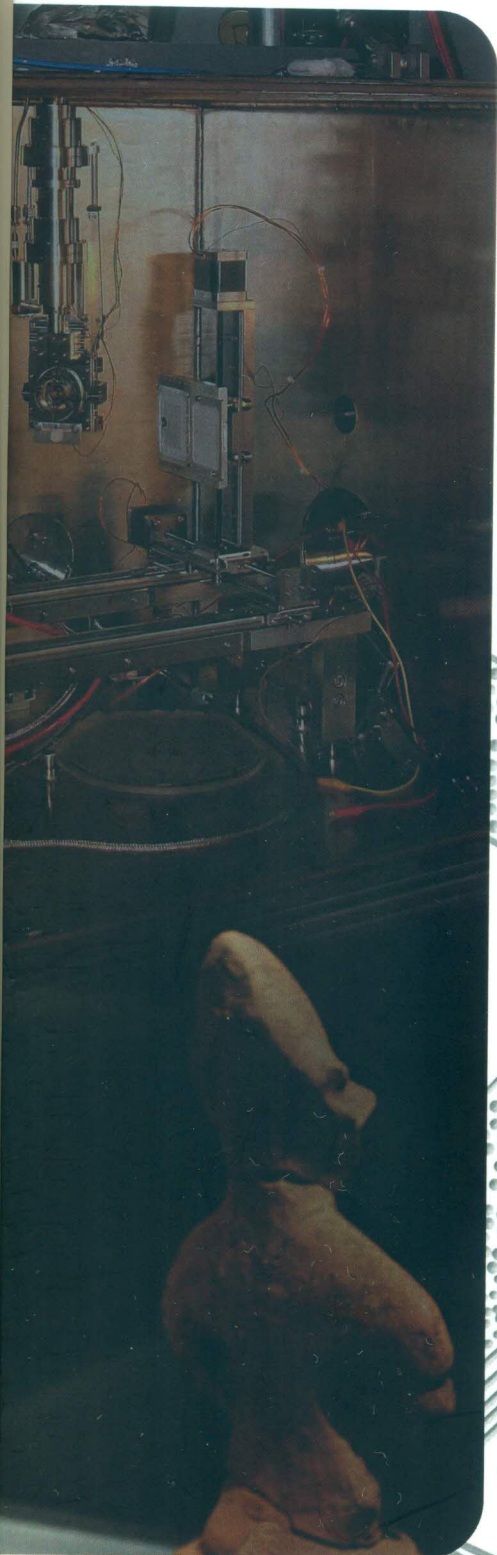




8th BALKAN SYMPOSIUM on **ARCHAEOLOGY**
BELGRADE 3-6 OCTOBER 2022

BOOK OF ABSTRACTS



Eight Balkan Symposium in Archaeometry

Editors: Roman Balvanović, Milica Marić Stojanović, Maja Gajić-Kvaščev

Organized by: Vinča Institute of Nuclear Sciences — National Institute of Serbia, University of Belgrade, Serbia



In collaboration with: National Museum Belgrade



With support of: Ministry of Education, Science and Technological Development of the Republic of Serbia, grant No. 451-03-1559/2022-14



Institute for Archaeo-Metallurgical studies, London



University of Belgrade, Rectorate



Cover design: Danijela Paracki

Editing: Bojana Babić

Read proofing: Maja Gajić-Kvaščev

Copyright © 2022 by Vinča Institute of Nuclear Sciences.

ISBN 978-86-7306-167-2

Printed in Serbia by Apollo Plus, 2022

Front page: motives from Vinča culture ceramics (5,700-4,500 BC).

Eighth Balkan Symposium on Archaeometry, 3rd—6th October 2022, Belgrade, Serbia

Organizing Committee

Balvanović Roman, head, Institute Vinča
Marić Stojanović Milica, deputy head, National Museum Belgrade
Vijatov Ivana, National Museum Belgrade
Gajić Kvašček Maja, Institute Vinča
Babić Bojana, Institute Vinča
Prvulović Milica, Institute Vinča

Programme Committee

Balvanović Roman, head, Institute Vinča
Marić Stojanović Milica, deputy head, National Museum Belgrade
Andrić Velibor, Institute Vinča
Damjanović Ljiljana, Professor, University of Belgrade
Gajić Kvašček Maja, Institute Vinča
Ivanka Holclajtner Antunović, Professor, University of Belgrade
Korolija Daniela, Associate professor, Academy of Art, University of Novi Sad
Manojlović Dragan, Professor, University of Belgrade
Snežana Vučetić, Assistant professor, University of Novi Sad
Špehar Perica, Associate professor, University of Belgrade
Tripkovic Tatjana, Institute for Protection of Cultural Monuments of Serbia

International Advisory Committee

Alessandra Giumlia-Mair, Italy
Andreas Karydas, Greece
Borić Dušan, UK
Erguen Lafli, Turkey
Gkanetsos Theodoros, Greece
Gliozzo Elisabetta, Italy
Krajcer Bronić Ines, Croatia
Lorenzo Giuntini, Italy
Martina Griesser, Austria
Nikola Civici, Albania
Nona Palincas, Romania
Radivojević Miljana, UK
Radvan Roxana, Romania
Raffaella Fontana, Italy
Rehren Thilo, Cyprus
Šmit Žiga, Slovenia
Vandenabeele Peter, Belgium

CONTENTS

Preface	9
Abstracts	11
Macro-Raman mapping: a new step in Raman spectroscopy of art objects P. Vandenabeele and A. Rousaki	13
MA-XRF imaging of Greek Antiquities A. G. Karydas, C. Caliri, E. Eleftheriou, K. Tsampa, Th. Gerodimos and D. F. Anagnostopoulos	15
Glass through the Adriatic: an overview E. Gliozzo, F. Giannetti, M. Turchiano and M. Ferri	17
Metallurgy of the Vinča culture: going beyond the 'earliest' and the 'first' M. Radivojević and Th. Rehren	19
Latest analyses on Russian Byzantine frescoes from Novgorod A. R. G. Giumlia-Mair and M. V. Vdovichenko	21
Stable isotope analysis of human bone remains from the North-Thracian <i>dava</i> at Popești (2 nd – 1 st c. BC), in Southeastern Romania N. Palincaș, V. Atudorei, C. A. Simion, M. Mihon, A. Răzvan Petre, C. Mănăilescu and C. Șendroiu	23
Radiocarbon dating of animal bones from Vindija and Mujina Pećina caves – can we have an agreement? I. Krajcar Bronić, I. Karavanić, A. Sironić, N. Vukosavljević, M. Banda and F. Smith	25
Environmental and Historical Context of the King's Road near Novi Pazar– application of GIS I. Kajtez and V. Vidosavljević	27
Digital mapping and 3D geovisualization in cultural heritage. The Ancient Pylos case study G. Malaperdas and N. Zacharias	29
A Software Tool for Egyptian-Coptic Language A. Kontogianni, T. Ganetsos and E. C. Papakitsos	31
Analysis of Panel Paintings by Clinical Multi-Slice Computed Tomography O. Klisurić, O. Nikolić, A. Spasić, U. Molnar, V. Till and D. Korolija Crkvenjakov.....	33
Preliminary results on the presence, diversity, and dynamics of cellulolytic airborne fungi on the premises of the Archbishop's and Kaptol's Library, and the State	

OR2

Radiocarbon dating of animal bones from Vindija and Mujina Pećina caves – can we have an agreement?

I. Krajcar Bronić¹, I. Karavanić², A. Sironić¹, N. Vukosavljević², M. Banda²
and F. Smith^{3,4}

¹Zagreb Radiocarbon Laboratory, Ruđer Bošković Institute, Zagreb, Croatia

²Department of Archaeology, Faculty of Humanities and Social Sciences, University of Zagreb, Croatia

³Department of Sociology and Anthropology, Illinois State University, Normal, USA

⁴Department of Anthropology, University of Colorado, Boulder, USA

✉ I. Krajcar Bronić krajcar@irb.hr

Keywords: ¹⁴C dating, bones, Vindija Cave, Mujina Pećina Cave.

The project „Last Neanderthals at the Crossroads of Central Europe and the Mediterranean – NECEM“ (financed by Croatian Science Foundation, HRZZ-IP-2019-04-6649) aims to gain new data on the adaptations of late Neanderthals in today's Croatia by interdisciplinary methods. Radiocarbon gives a chronological framework providing the samples are not older than about 50000 years.

A total of 16 bone samples from two caves, Vindija (Donja Voća, NW Croatia) and Mujina Pećina cave (Plano, near Kaštela, Dalmatia), were selected for radiocarbon AMS dating at the Ruđer Bošković Institute (RBI) laboratory. Collagen extraction yielded >1% of collagen for 10

samples. From six samples, the collagen yield was lower than 0.5 % and those bones could not have been dated since the low yield (<1%) may produce an underestimated radiocarbon age. For comparison, 12 bone samples were sent to Oxford Radiocarbon Accelerator Unit (ORAU) for radiocarbon dating with an additional step of ultrafiltration (UF) to select collagen fractions having molecules larger than 30 kDa. Four could not have been dated due to low collagen yield (<1 ‰), five were dated despite low yield, and only three were successfully dated. The ¹³C values of bone samples showed the same range in both RBI and ORAU laboratories, between -18.3 ‰ and -21.8 ‰, typical values for bone collagen. Radiocarbon conventional

ages of these limited number of bone samples were comparable. Much more radiocarbon dating results of the old bones are necessary to obtain more reliable results.

The preliminary results presented here point to the possible

obstacles in radiocarbon dating of late Middle Paleolithic samples: bones are not well preserved, the yield of collagen is often low, and the age is close to the limit of the radiocarbon method.