

Clay mineralogy and geochemistry of upper Jurassic bauxites and their immediate cover, Istria, Croatia [Prezentacija]

Perković, Ivor

Supplement / Prilog

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:169:420860>

Rights / Prava: [In copyright](#) / [Zaštićeno autorskim pravom.](#)

Download date / Datum preuzimanja: **2024-07-16**



Repository / Repozitorij:

[Faculty of Mining, Geology and Petroleum
Engineering Repository, University of Zagreb](#)



Clay mineralogy and geochemistry of upper Jurassic bauxites and their immediate cover, Istria, Croatia

Ivor Perković¹, Goran Durn¹, Darko Matešić¹

¹Faculty of Mining, Geology and Petroleum Engineering, University of Zagreb, Zagreb 10000, Croatia



WIANLab



hrzz
Croatian Science
Foundation



This work has been fully supported by Croatian Science Foundation under the project no. IP-2019-04-8054 – WIANLab („Western Istrian Anticline as an ideal natural laboratory for the study of the regional unconformities in carbonate rocks“)

Introduction and deposit overview

- ◆ The aim of this study was to determine the **mineralogy** and **geochemistry** of the Rovinj deposit (Fig. 1.) and of the clays/marls overlying the deposit
- ◆ Obtained results regarding the mineralogy, of clays especially, and the geochemical variations in the bauxite and overlying clays should allow the **reconstruction of the paleoenvironment and paleoclimate** in which the bauxite and its cover were forming
- ◆ The bauxite in the Rovinj deposit is of Upper Jurassic age,
- ◆ It formed during the emersion which lasted between **3 to 5 Ma**, in the the succession of the **Western Istrian anticline**
- ◆ On a large scale, the anticline is a part of the **Adriatic carbonate platform**
- ◆ The Rovinj deposit is the **only open bauxite mine in Croatia**
- ◆ The size of the deposit is estimated to be larger than 15 Mt, making it **one of the largest bauxite deposits in Croatia**

Figure 1. Rovinj bauxite deposit

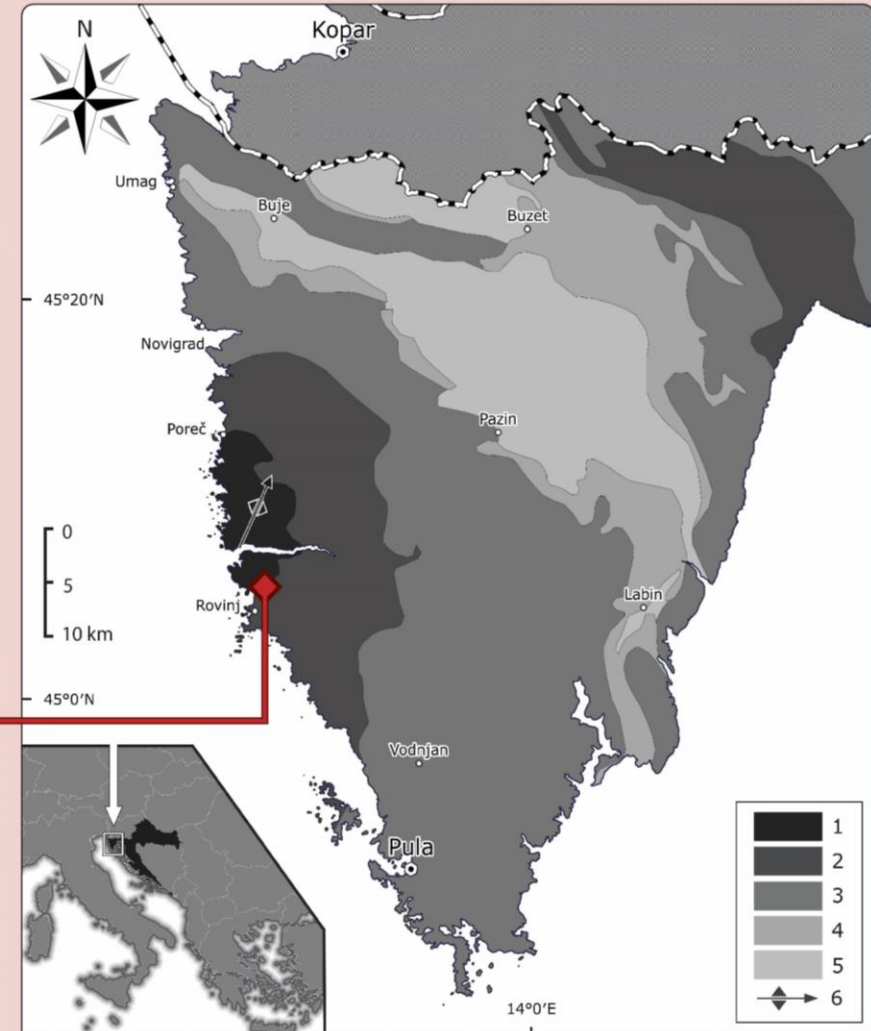
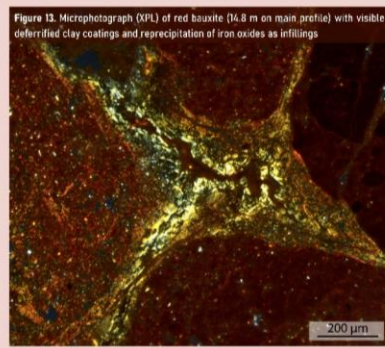
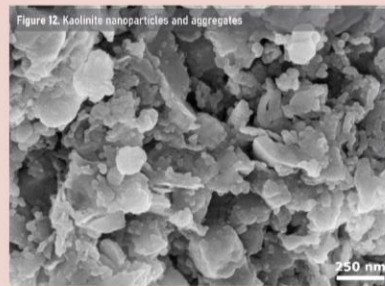
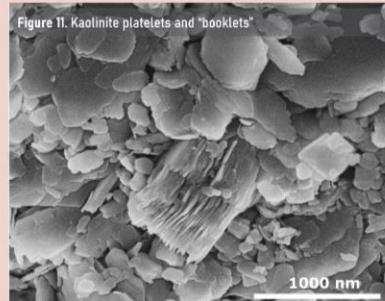
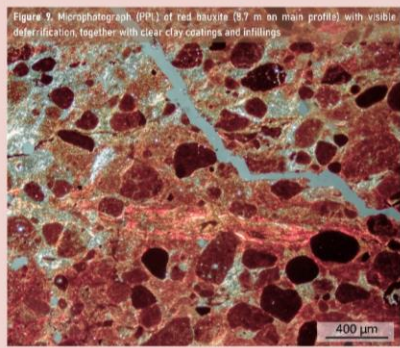
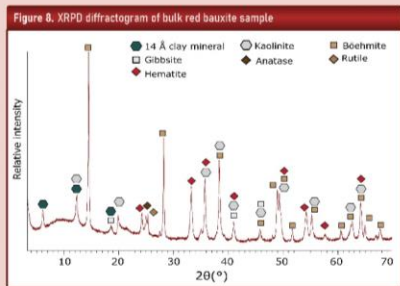
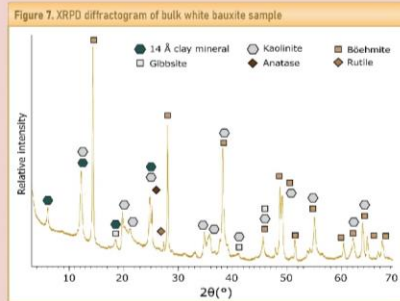
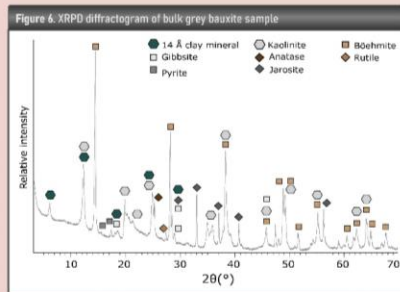
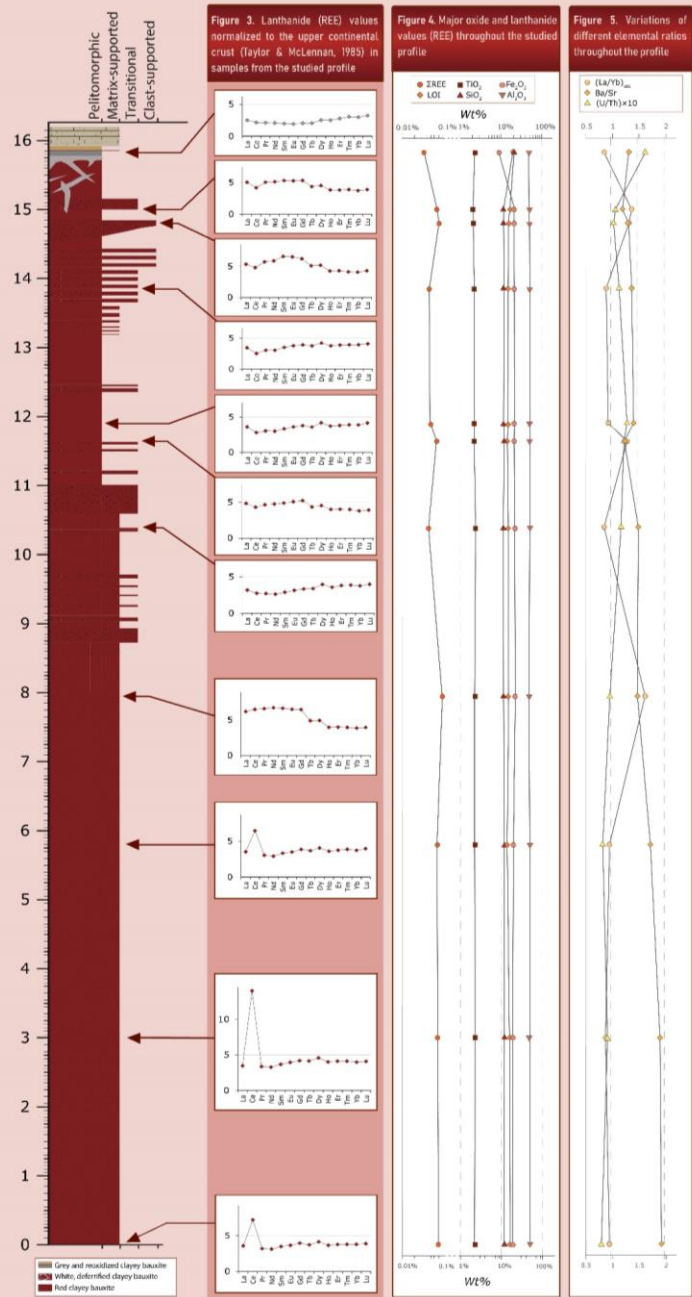


Figure 2. Simplified geological map of Istria modified after Velić (1995). 1 - 1st megasequence (Jurassic), 2 - 2nd megasequence (Lower Cretaceous), 3 - 3rd megasequence (Upper Cretaceous), 4 - 4th megasequence (Lower Eocene), 5 - 4th megasequence (Middle to Upper Eocene), 6 - Western Istrian anticline

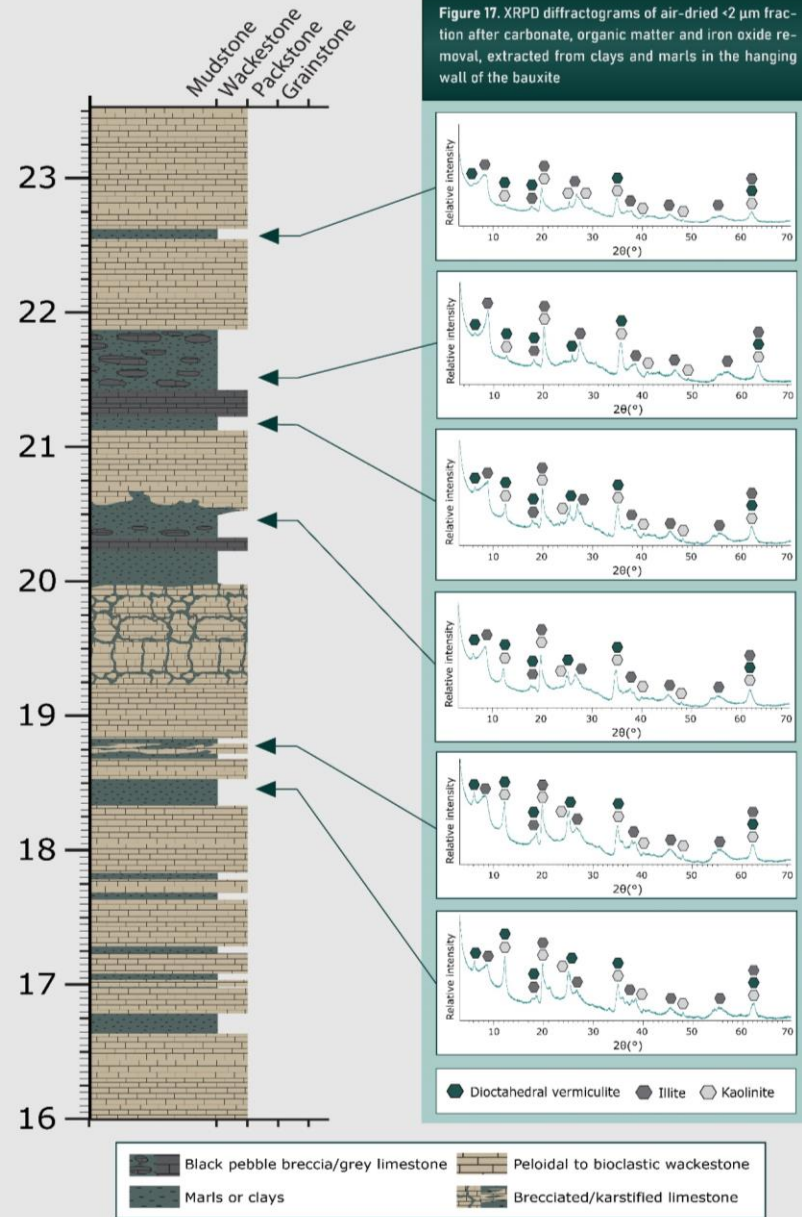
Methods

- ◆ Samples were collected from the selected profile on the bauxite outcrop
- ◆ In this research, data for 11 bauxite samples and 6 clays/marls is shown
- ◆ On bauxite samples, several analytical methods have been performed:
 - ◇ **XRPD** on bulk samples
 - ◇ **XRF**
 - ◇ **ICP-MS**
 - ◇ **SEM-EDS**
 - ◇ **Petrography**
 - ◇ **Micropedology** according to Stoops (2021.)
- ◆ On clay/marl samples only **XRPD** of bulk and <2 µm fraction was performed
- ◆ the <2 µm was extracted through gravitational separation after the removal of carbonates, organic matter and iron oxides
- ◆ **XRPD** patterns of non-oriented <2 µm fraction samples were taken after the following treatments:
 - ◇ **Air-drying**
 - ◇ **Ethylen glycol** solvation
 - ◇ **Glycerol** solvation
 - ◇ Dissolution in **1:1 HCl**
 - ◇ Heating to **550°C**

Rovinj bauxite profile



Bauxite cover succession





Thank you for your attention!

References:

- ◆ **Durn, G., Ottner, F., Tišljär, J., Mindszenty, A., & Barudžija, U. (2003).** Regional Subaerial Unconformities in Shallow-Marine Carbonate Sequences of Istria: Sedimentology, Mineralogy, Geochemistry and Micromorphology of Associated Bauxites, Palaeosols and Pedo-Sedimentary Complexes. In I. Vlahović & J. Tišljär (Eds.), Field trip guidebook: Evolution of depositional environments from the palaeozoic to the quaternary in the Karst Dinarides and the Pannonian Basin. 22nd IAS Meeting of Sedimentology (pp. 209–255). Institute of Geology Zagreb.
- ◆ **Stoops, G. (2021).** Guidelines for analysis and description of soil and regolith thin sections (Vol. 184). John Wiley & Sons.
- ◆ **Taylor, S. R., & McLennan, S. M. (1985).** The Continental Crust: its Composition and Evolution. An Examination of the Geochemical Record Preserved in Sedimentary Rocks. Blackwell, Oxford.
- ◆ **Velić, I., Matičec, D., Tišljär, J., & Vlahović, I. (1995).** Opći prikaz geološke građe Istre (A review of the geology of Istria). 1st Croatian Geological Congress, Excursion Guidebook, 5–30.