

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: **2025-02-28**



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



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

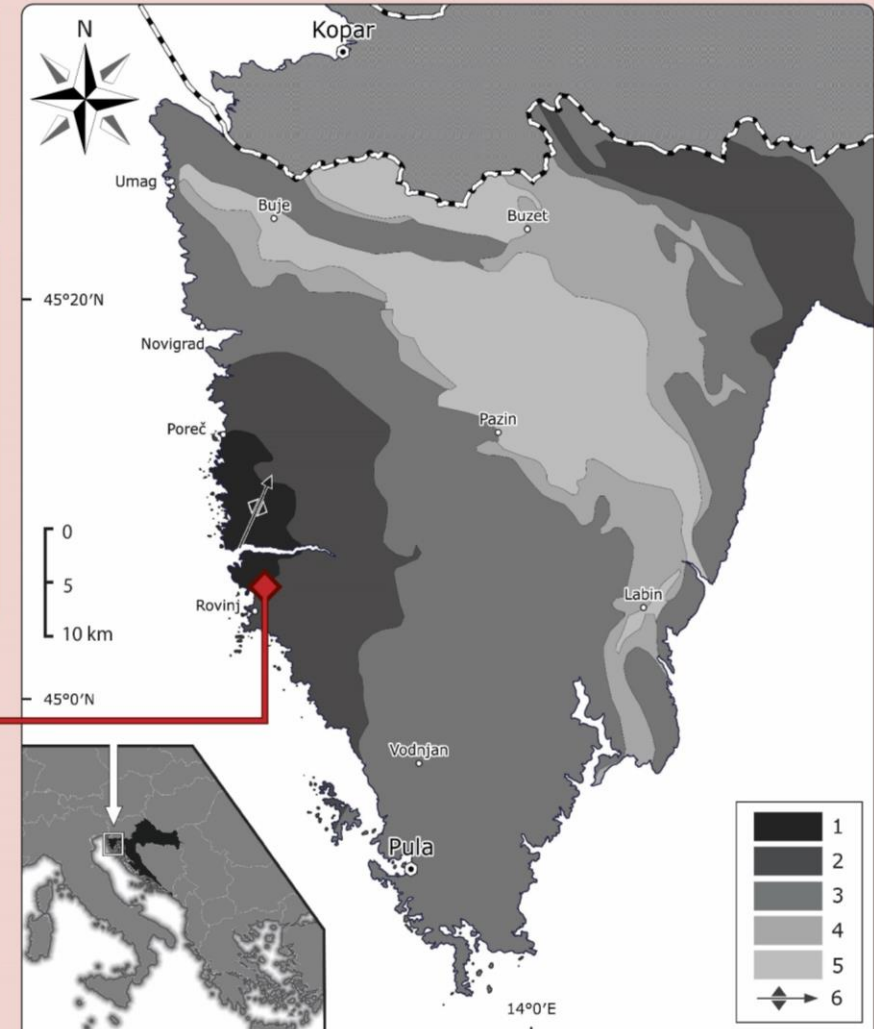


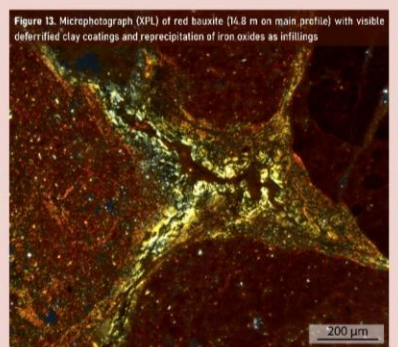
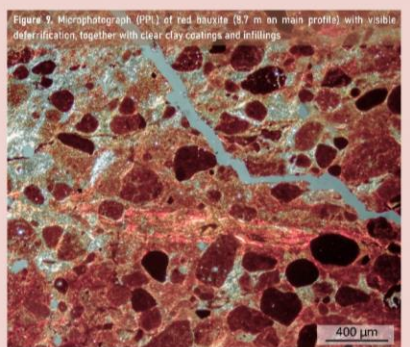
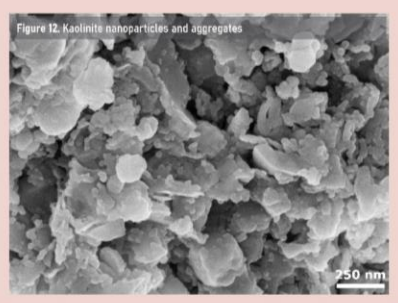
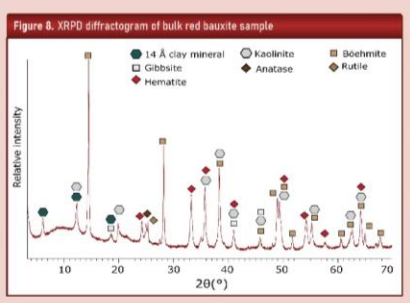
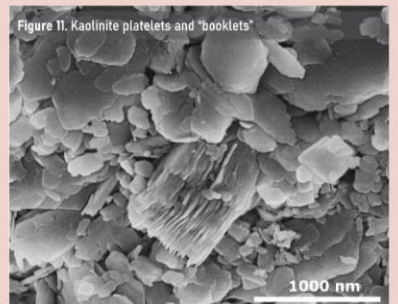
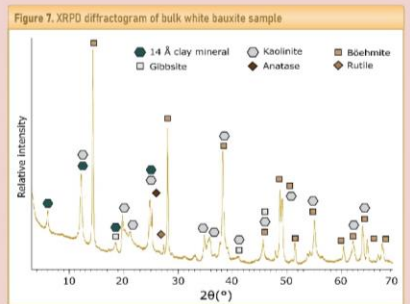
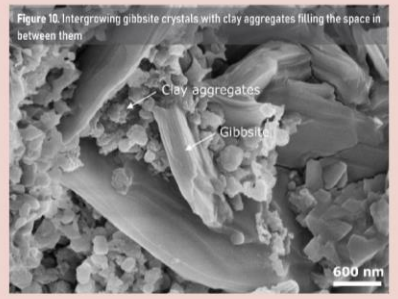
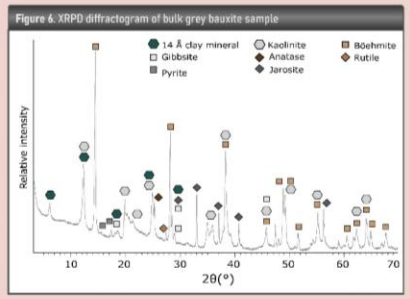
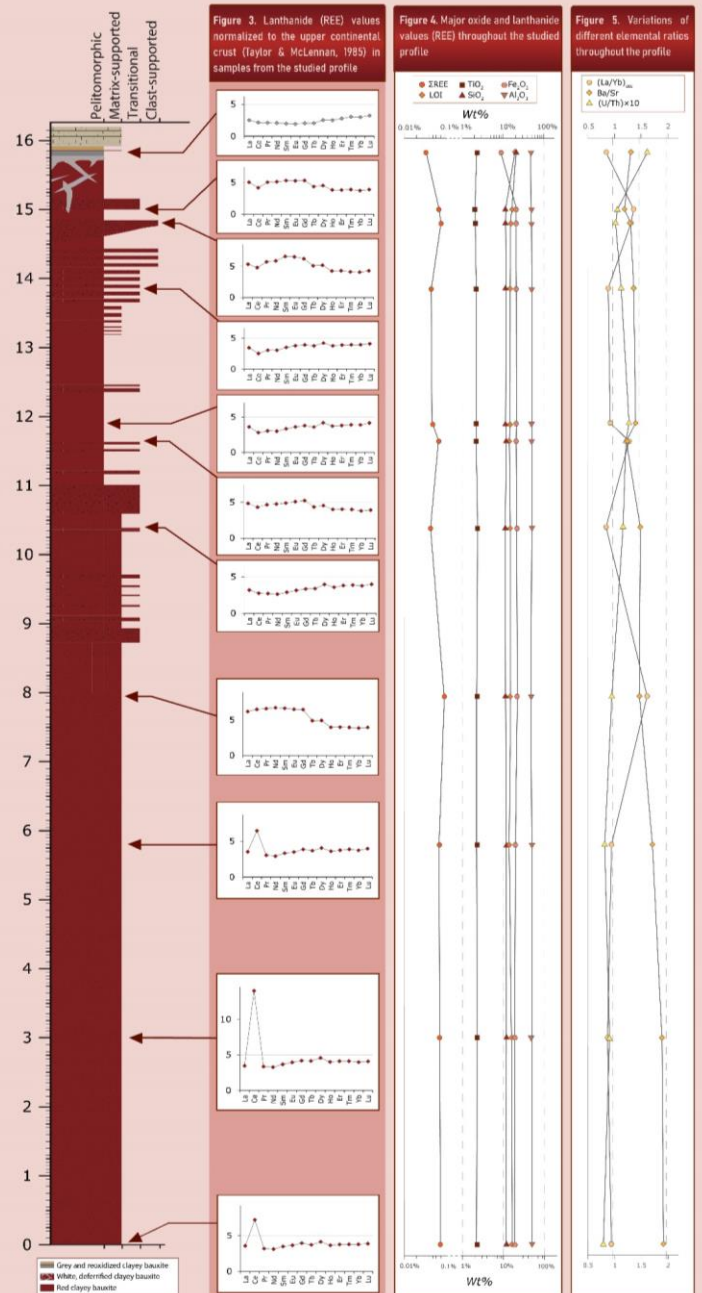
Figure 2. Simplified geological map of Istria modified after Velić (1995). 1 - 1st megasequence (Jurassic), 2 - 2nd megasequence (Lower Cretaceous), 3 - 3rd megasequence (Upper Cretaceous), 4 - 4th megasequence (Lower Eocene), 5 - 4th megasequence (Middle to Upper Eocene), 6 - Western Istrian anticline

Methods

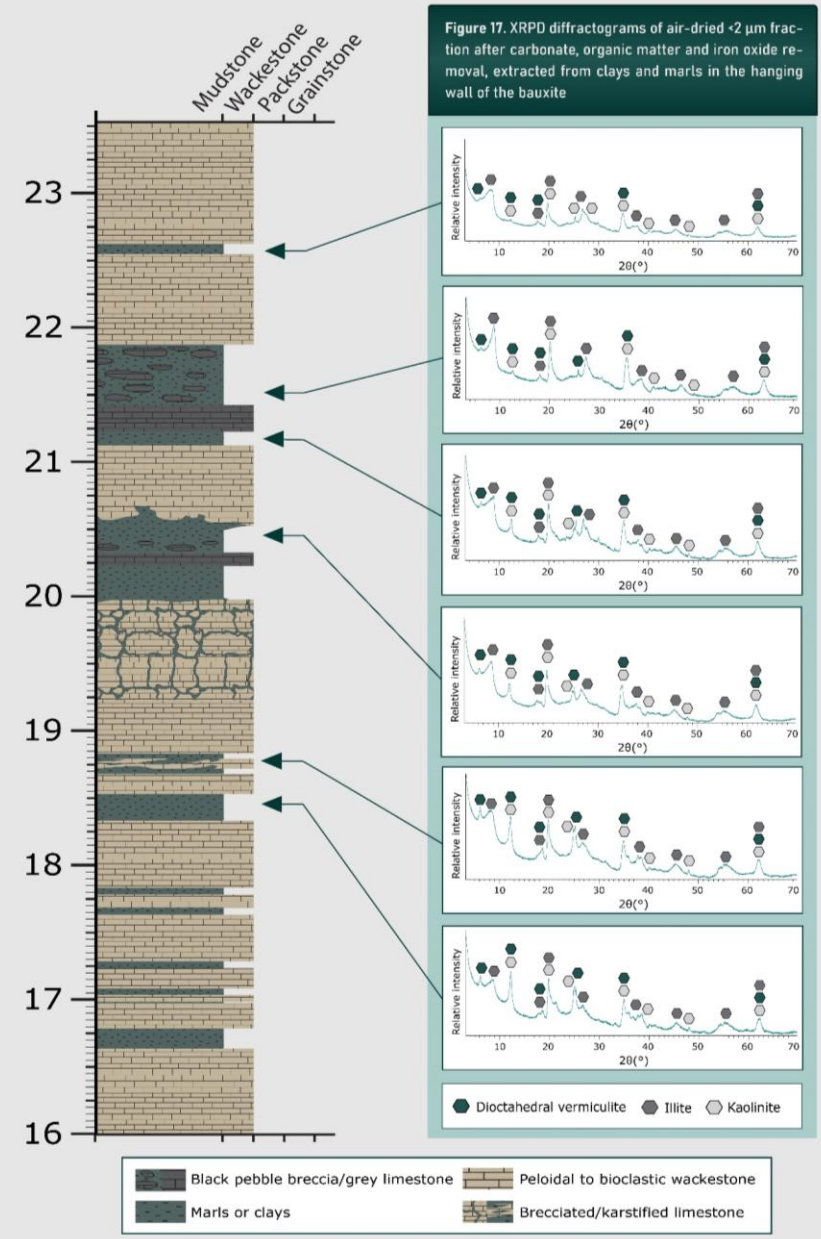
- ◆ Samples were collected from the selected profile on the bauxite outcrop
- ◆ In this research, data for 11 bauxite samples and 6 clays/marls is shown
- ◆ On bauxite samples, several analytical methods have been performed:
 - ◇ **XRPD** on bulk samples
 - ◇ **XRF**
 - ◇ **ICP-MS**
 - ◇ **SEM-EDS**
 - ◇ **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., Tišljari, 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. Tišljari (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., Tišljari, J., & Vlahović, I. (1995).** Opći prikaz geološke građe Istre (A review of the geology of Istria). 1st Croatian Geological Congress, Excursion Guidebook, 5–30.