

PERSONAL INFORMATION

Name and surname	Emina Mrkalić
Date and place of birth	13.12.1981. Kragujevac
Scientific title	Research associate
E-mail	emina.mrkalic@pmf.kg.ac.rs
Educational-scientific / educational-artistic field	Natural Sciences and mathematics
University, Faculty, Organizational unit	University of Kragujevac, Institute for Information technologies Kragujevac, Department of Sciences
Research field and areas	Chemistry

EDUCATION

BACHELOR

Year	2000.
Place	Kragujevac
Institution	Faculty of Science, University of Kragujevac

MASTER STUDIES

Year	
Place	
Institution	

DOCTORAL DISSERTATION

Year	2017.
Place	Kragujevac
Institution	Faculty of Science, University of Kragujevac
Title of doctoral dissertation	“Synthesis and antitumor activity of palladium(II) complexes with oxalic and malonic acid diamide derivatives”
Scientific title	Research Associate
Research area	Inorganic chemistry

PROFESSIONAL BIOGRAPHY – ELECTION IN RESEARCH OR SCIENTIFIC TITLE

Date	Institution	Scientific title
28.03.2018.	Faculty of Science, University of Kragujevac	Research Associate
22.04.2015.	Faculty of Science, University of Kragujevac	Research Assistant
25.04.2012.	Faculty of Science, University of Kragujevac	Research Assistant
17.12.2008.	Faculty of Science, University of Kragujevac	Junior Research Assistant

PROFESSIONAL BIOGRAPHY - TRAINING

Year	Institution	Duration
2012.	Was in Group of Professor Maria Lalia Kantouri, Aristotle University, Thessaloniki, Greece	3 months

ENGAGEMENT IN THE FORMATION OF SCIENTIFIC PERSONNEL

At the Institute of Chemistry, Faculty of Science in Kragujevac, she was engaged in practical teaching in the subjects: Analytical Chemistry 3, Basics of Chemistry, Industrial Pollutants and Norms in Environmental Protection in the bachelor studies of chemistry and biology.

PARTICIPATION IN NATIONAL PROJECTS FINANCED BY MINISTRY OF EDUCATION/MINISTRY OF SCIENCE AND TECHNOLOGICAL DEVELOPMENT/SCIENCE FUND OF THE REPUBLIC OF SERBIA:

Member and researcher of project "Preclinical tests of bioactive substances" (III 41010) (2011-2019).

Member and researcher of project "Bioactive complexes of p and d metal ions with pharmacotherapeutically important ligands" (142013) (2008-2011).

MEMBERSHIP IN SCIENTIFIC AND PROFESSIONAL ASSOCIATIONS

Member of the Serbian Crystallographic Society (SKD) and the Serbian Cancer Research Society (SDIR).

ORGANIZATION OF NATIONAL/INTERNATIONAL SCIENTIFIC MEETINGS (CONFERENCES, CONGRESSES...)

Participated in the organization of the XXVII CONFERENCE OF THE SERBIAN CRYSTALLOGICAL SOCIETY, 16-17. September 2021 in Kragujevac, as a member of the organizing committee.

Participated in the organization of the 1st International Conference on Chemo and Bioinformatics, 26-27. in October 2021 in Kragujevac, as a member of the local organizing committee.

LIST OF SCIENTIFIC PAPERS:

Papers published in scientific journals of international scientific importance	Sum 11
<p>Zoran D. Matović, Emina Mrkalić, Gordana Bogdanović, Vesna Kojić, Auke Meetsma and Ratomir Jelić</p> <p>Antitumor effects of a tetradentate amido-carboxylate ligands and corresponding square-planar palladium(II) complexes toward some cancer cells. Crystal structure, DFT modeling and ligand to DNA probe Docking simulation</p> <p><i>Journal of Inorganic Biochemistry</i>, 121, (2013) 134-144</p> <p>https://doi.org/10.1016/j.jinorgbio.2013.01.006</p> <p>ISSN: 0162-0134, (IF₂₀₁₃ = 3.274, 8/45; M21, Chemistry, Inorganic & Nuclear)</p>	
<p>Emina Mrkalić, Ariadni Zianna, George Psomas, Maria Gdaniec, Agnieszka Czapik, Evdoxia Coutouli-Argyropoulou, Maria Lalia-Kantouri</p> <p>Synthesis, characterization, thermal and DNA-binding properties of new zinc complexes with 2-hydroxyphenones</p> <p><i>Journal of Inorganic Biochemistry</i>, 134, (2014) 66–75</p> <p>https://doi.org/10.1016/j.jinorgbio.2014.01.019</p> <p>ISSN: 0162-0134, (IF₂₀₁₄ = 3.444, 8/45; M21; Chemistry, Inorganic & Nuclear)</p>	
<p>Emina M. Mrkalić, Ratomir M. Jelić, Olivera R. Klisurić and Zoran D. Matović</p> <p>Synthesis of novel palladium(II) complexes with oxalic acid diamide derivatives and their interaction with nucleosides and proteins. Structural, solution, and computational study</p> <p><i>Dalton Transactions</i>, 43, (2014) 15126-15137</p> <p>https://doi.org/10.1039/C3DT53384K</p> <p>ISSN:1477-9226 (IF₂₀₁₄ = 4.197; 6/45; M21; област: Chemistry, Inorganic & Nuclear)</p>	
<p>Emina Mrkalić, Ratomir Jelić, Stefan Stojanović, Miroslav Sovrlić</p> <p>Interaction between olanzapine and human serum albumin and effect of metal ions, caffeine and flavonoids on the binding: A spectroscopic study</p> <p><i>Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy</i>, 249 (2021) 119295</p> <p>https://doi.org/10.1016/j.saa.2020.119295</p> <p>ISSN: 1386-1425 (IF₂₀₂₁ = 4.831; 5/43; M21; област: Spectroscopy)</p>	
<p>Miroslav Sovrlić, Emina Mrkalić, Ratomir Jelić, Marina Ćendić Serafinović, Stefan Stojanović, Nevena Prodanović, Jovica Tomović.</p>	

Effect of caffeine and flavonoids on the binding of tigecycline to human serum albumin: A Spectroscopic study and molecular docking

Pharmaceuticals. **15**(3) (2022) 266

<https://doi.org/10.3390/ph15030266>

ISSN: 1424-8247 (IF₂₀₂₀ = 5.863; 38/276; **M21**; област: Pharmacology & Pharmacy; 9/63; област: Chemistry, Medicinal)

Milena G. Ćurčić, Milan S. Stanković, **Emina M. Mrkalić**, Zoran D. Matović, Dragić D. Banković, Danijela M. Cvetković, Dragana S. Đačić, Snežana D. Marković

Antiproliferative and proapoptotic activities of methanolic extracts from *ligustrum vulgare* L. as an individual treatment and in combination with palladium complex

International Journal of Molecular Sciences **13**(2) (2012) 2521-2534

ISSN: 1422-0067 (IF₂₀₁₂ = 2.464; 48/152; **M22**; област: Chemistry, Multidisciplinary)

<https://doi.org/10.3390/ijms13022521>

Edina H. Avdović, Žiko B. Milanović, Krešimir Molčanov, Sunčica Roca, Dražen Vikić-Topić, **Emina M. Mrkalić**, Ratomir M. Jelić, Zoran S. Marković

Synthesis, characterization and investigating the binding mechanism of novel coumarin derivatives with human serum albumin: Spectroscopic and computational approach

Journal of Molecular Structure **1254** (2022) 132366-

ISSN: 0022-2860 (IF₂₀₂₁ = 3.841; 82/163; **M22**; област: Chemistry, Physical)

<https://doi.org/10.1016/j.molstruc.2022.132366>

Jelena D. Berić, Stefan D. Stojanović, **Emina M. Mrkalić**, Zoran D. Matović, Dragan R. Milovanović, Miroslav V. Sovrlić, Ratomir M. Jelić

Interaction of haloperidol with human serum albumin and effect of metal ions on the binding

Monatshefte für Chemie - Chemical Monthly, **149** (2018) 2359-2368

ISSN: 0026-9247 (IF₂₀₁₈ = 1.501; 112/172; **M23**; област: Chemistry, Multidisciplinary)

<https://doi.org/10.1007/s00706-018-2310-z>

Miroslav Sovrlić, Ratomir Jelić, Marko Antonijević, Zoran Marković, Jovica Tomović, **Emina Mrkalić**

Influence of the caffeine on the interaction Between haloperidol and human serum albumin: Spectroscopic and molecular docking approach

Studia Universitatis Babes-Bolyai. Ser. Chimia, **4** (2021) 7-22

ISSN: 1224-7154 (IF₂₀₂₁ = 0.558; 171/180; **M23**; област: Chemistry, Multidisciplinary)

<https://doi.org/10.24193/subbchem.2021.4.01>

Ignjat P. Filipović, **Emina M. Mrkalić**, Giorgio Pelosi, Vesna Kojić, Dimitar Jakimov, Dejan Baskić and Zoran D. Matović

Structural, biological and computational study of oxamide derivative

Journal of the Serbian Chemical Society 87(0) (2022) 545-559

ISSN: 0352-5139 (IF₂₀₂₁ = 1.100; 153/180; **M23**; област: Chemistry, Multidisciplinary)

<https://doi.org/10.2298/JSC211204114F>

Jovana M. Sekulić, **Emina M. Mrkalić**, Mirjana M. Stojanović-Petrović,
 Filip J. Popović, Tanja B. Trakić
 ASSESSMENTS OF THE IMPACT OF METALS ON JUVENILE EARTHWORMS
 (*Eisenia fetida*) IN LABORATORY CONDITIONS
 Kragujevac Journal of Science, 44 (2022) 255-266
<https://doi.org/10.5937/KgJSci2244255S>
 ISSN: 1450-9636

Proceedings of international scientific conferences

Sum
 10

Emina Mrkalić, Ratomir Jelić, Stefan Stojanović, Miroslav Sovrlić
 Interaction between olanzapine and human serum albumin and effect of flavonoids on
 the binding: A spectroscopic study
6th International Electronic Conference on Medicinal Chemistry,
 06 November 2020, ECMC-6,
<https://doi.org/10.3390/ECMC2020-07480>

Aleksandar Djurović, Ratomir Jelić, Dragan Milovanović, Marina Ćendić Serafinović,
 Miroslav Sovrlić, Stefan Stojanović, **Emina Mrkalić**
 Studies on the interaction between linamarin and human serum albumin
7th International Electronic Conference on Medicinal Chemistry,
 1–30 November 2021, ECMC-7,
<https://dx.doi.org/10.3390/ECMC2021-11383>

Emina Mrkalić, Marina Ćendić Serafinović, Stefan Stojanović, Miroslav Sovrlić, Ratomir
 Jelić
 Binding of tigecycline to human serum albumin in the presence of (+)-catechin
7th International Electronic Conference on Medicinal Chemistry,
 1–30 November 2021, ECMC-7,
<https://dx.doi.org/10.3390/ECMC2021-11366>

Marina Ćendić Serafinović, **Emina Mrkalić**, Ratomir Jelić, Stefan Stojanović, Miroslav
 Sovrlić
 The affinity of tigecycline to human serum albumin in the presence of diosmin
7th International Electronic Conference on Medicinal Chemistry,
 1–30 November 2021, ECMC-7,
<https://doi.org/10.3390/ECMC2021-11367>

Emina Mrkalić, Marina Ćendić Serafinović, Ratomir Jelić, Stefan Stojanović, Miroslav
 Sovrlić
 Influence of quercetin on the binding of tigecycline to human serum albumin
1st International Conference on Chemo and Bioinformatics,
 26-27 October 2021, Kragujevac, Serbia
<https://doi.org/10.46793/ICCB121.363M>

Z. D. Matović, V. D. Miletić, **E. M. Mrkalić**, M. S. Ćendić, G. Bogdanović, V. Kojić

Molecular modeling, structure and antitumor activity of Pd(II) complexes with carboxylate derivatives of oxalic and malonic acid diamides
10th European Biological Inorganic Chemistry Conference,
22-26 June 2010, Thessaloniki, Greece

Miroslav Sovrlić, Aleksandar Rancić, Jovica Tomović, **Emina Mrkalić** Comparative phytochemical analysis of the essential oils of *Piper nigrum* L. from four different countries

4th International Electronic Conference on Medicinal Chemistry,
1–30 November 2018, ECMC-4, session Posters,
<https://doi.org/10.3390/ecmc-4-05607>

Emina Mrkalić, Jovica Tomović, Jovana Milosavljević, Aleksandar Kočović, Ratomir Jelić, Miroslav Sovrlić

The influence of quercetin on the interaction of haloperidol with human serum albumin
5th International Electronic Conference on Medicinal Chemistry,
1–30 November 2019, ECMC-5, session Posters,
<https://doi.org/10.3390/ECMC2019-06356>

Miroslav Sovrlić, Aleksandar Kočović, Ratomir Jelić, Jovica Tomović, Anđela Ušević, **Emina Mrkalić**

The effect of the caffeine on the binding of haloperidol to human serum albumin
5th International Electronic Conference on Medicinal Chemistry,
1–30 November 2019, ECMC-5, session Posters,
<https://doi.org/10.3390/ECMC2019-06356>

Emina Mrkalić, Miroslav Sovrlić, Ratomir Jelić, Stefan Stojanović, Nevena Prodanović, Jovica Tomović

Influence of xanthine derivative caffeine on the binding of tigecycline to human serum albumin
18th Hellenic Symposium on Medicinal Chemistry (HSMC-18),
25-27 February 2021, online Symposium, session Posters (PO036)

Proceedings of national scientific conferences	Sum 5
<p>Z. Matović, V. Miletić, M. Ćendić, E. Mrkalić, P. van Koningsbruggen, A. Meetsma Structure and DFT analyse of complex $[\text{Ni}(\text{H}_2\text{O})_6][\text{Ni}(\text{ed3a})(\text{H}_2\text{O})]_2 \cdot 2\text{H}_2\text{O}$ XVII Conference of the Serbian Crystallographic society, 2010, Ivanjica, Serbia, <i>Book of Abstracts</i> p. 26-27.</p> <p>J. Žižić, M. Ćurčić, A. Obradović, E. Mrkalić, Z. Matović, M. Ćendić, P. Djurdjević, D. Živić, S. Marković Evaluation of antiproliferative activity of new palladium complexes and mechanism of cell death on HCT-116 and MDA-MB-231 cell lines</p>	

Scientific Conference with International Participation "Preclinical Testing of Active Substances and Cancer Research"

16-18 March 2011, Kragujevac, Serbia

ISBN 978-86-7760-064-8

Marina Ćendić, Maja B. Đukić, **Emina M. Mrkalić**, Marija S. Jeremić, Zoran D. Matović
Upravljanje komunalnim i industrijskim otpadom na teritoriji grada Kragujevca

The 6th symposium chemistry and environmental protection – envirochem

21-23. maj 2013 Vršac, Serbia

Emina Mrkalić, Giorgio Pelosi, Zoran Matović,

Synthesis and crystal structure of potassium-(malamido-*n,n'*-dipropionato)palladium(ii)-hydrate, C₉H₁₂K₂N₂O₇Pd

21st Conference of the Serbian Crystallographic Society,

10-12 june 2014, Uzice, Serbia,

Book of Abstracts p. 74-75.

Marija Jeremić, Zoran Matović, **Emina Mrkalić**, Peter Comba, Hubert Wadepohl,
"SYNTHESIS AND CRYSTAL STRUCTURE OF *cis*-equatorial-AQUAETHYLENEDIAMINE-*N,N,N'*-TRIACETATORHODIUM(III) MONOHYDRATE, [Rh(ed3a)H₂O] x H₂O",

22nd Conference of the Serbian Crystallographic Society,

11-13 June 2015, Smederevo, Serbia,

Book of Abstracts p. 52-53.

CITATION OF SCIENTIFIC PAPERS

151

BRIEF DESCRIPTION OF RESEARCH IN THE PREVIOUS PERIOD

Synthesis of palladium(II) complexes with amide type ligands, studying structural and computational analysis and further testing these compounds *in vitro* in order to examine their antitumor activity and propose a mechanism of their action. The influence of food constituents on drug-HSA interactions (drugs are from the group of antibiotics and antipsychotics), as well as the degree of binding of newly synthesized compounds to human serum albumin, under simulated physiological conditions, was investigated. Binding constants, number of binding sites, thermodynamic parameters and structural changes of the examined systems were determined experimentally and theoretically.

BRIEF DESCRIPTION OF PLANNED RESEARCH IN THE NEXT PERIOD

In the following period, the binding of commercial drugs to certain blood plasma proteins will be examined, as well as, the examination of the specificity of drug-protein interactions

in simulated physiological conditions. Also, the interactions of newly synthesized compounds with human serum albumin and CT DNA molecule will be investigated. The binding constants, as well as binding sites, thermodynamic parameters and the nature of binding forces between drug/newly synthesized compounds and proteins will be determine.