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# VLADIMIR M. MARKOVIĆ, Ph.D.

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## PERSONAL INFORMATION

**Given and Family Name** Vladimir M. Marković

**Place of Birth** Pančevo, Serbia

**Date of Birth** November 4th, 1985

**Current working address** Faculty of Physical Chemistry,  
University of Belgrade,  
Studentski trg 12-16, 11000 Belgrade, Serbia  
Room: 377  
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[vladimirmarkovic@gmail.com](mailto:vladimirmarkovic@gmail.com)  
Website: <http://www.ffh.bg.ac.rs/vladimir-markovic/>  
<https://scholar.google.com/citations?user=GpNLMc8AAAAJ&hl=en>

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## WORKING EXPERIENCE

**October 2012 - present**  
Faculty of Physical Chemistry,  
University of Belgrade, Serbia Teaching assistant and research associate

**November 2010 – September 2012**  
Faculty of Physical Chemistry,  
University of Belgrade, Serbia, Research assistant

**September 2009 – October 2010**  
Faculty of Physical Chemistry,  
University of Belgrade, Serbia Junior researcher

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## TEACHING EXPERIENCE

**Teaching Assistant**  
Faculty of Physical Chemistry,  
University of Belgrade, Serbia

**Courses:**  
Dynamics of Nonlinear Processes  
(spring, fall 2016-2012; graduate course)

Chemical Kinetics

(spring 2017, 2016; undergraduate course)

General Physical Chemistry II  
(spring, 2017, 2016, 2014, 2013; undergraduate course)

General Physical Chemistry I  
(fall 2017, 2016, 2014-2012; undergraduate course)

Physical Chemistry for Biochemists  
(fall 2017, 2016; undergraduate course)

Physical Chemistry for Chemists  
(fall 2016, undergraduate course)

Statistical Thermodynamics  
(fall 2014, 2013; undergraduate course)

Molecular Spectrochemistry  
(spring 2014, 2013; undergraduate course)

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## EDUCATION

### 2009 – 2013

Ph.D. studies in Physical Chemistry  
Faculty of Physical Chemistry,  
University of Belgrade, Serbia

Ph.D. Thesis Title:

***“Modeling dynamic states of the hypothalamic-pituitary-adrenal system and cortisol concentration”***

Field:

**Biophysical Chemistry and Dynamics of Non-Equilibrium Processes**

Defense date:

**June 24<sup>th</sup>, 2013**

GPA:

**10.00 (100.0 out of 100 %)**

### 2005 – 2009

Graduate and undergraduate studies in Physical Chemistry  
Faculty of Physical Chemistry,  
University of Belgrade, Serbia

Diploma Thesis Title:

***“Modeling the influence of sex hormones estradiol-17 $\beta$  and testosterone on hypothalamic-pituitary-adrenal (HPA) system functioning”***

GPA:

**9.97 (99.7 out of 100 %)**

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## FIELDS OF RESEARCH INTEREST

- nonlinear dynamics of biochemical/physicochemical processes
  - computational systems biology/medicine
  - oscillatory processes in biological systems
  - systems chemistry
  - chemical kinetics
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## PUBLICATIONS

### Peer Reviewed Articles

A. Stanojević, **V. M. Marković**, Ž. Čupić, V. Vukojević, Ljiljana Kolar-Anić, "Modelling of the hypothalamic-pituitary-adrenal axis perturbations by externally induced cholesterol pulses of finite duration and with asymmetrically distributed concentration profile", *Russ. J. Phys. Chem. A*, 91 (2017) 112-119. doi: 10.1134/S0036024417130027

Ž. Čupić, A. Stanojević, **V. M. Marković**, Lj. Kolar-Anić, L. Terenius, V. Vukojević, "The HPA axis and ethanol: a synthesis of mathematical modelling and experimental observations", *Addiction Biology*, 2016, doi: 10.1111/adb.12409 (*in press*).

**V. M. Marković**, Ž. Čupić, S. Maćešić, A. Stanojević, V. Vukojević, Lj. Kolar-Anić, "Modelling cholesterol effects on the dynamics of the hypothalamic-pituitary-adrenal (HPA) axis", *Mathematical Medicine and Biology*, 33 (2016) 1-28.

Ž. Čupić, **V. M. Marković**, S. Maćešić, A. Stanojević, S. Damjanović, V. Vukojević, Lj. Kolar-Anić, "Dynamic transitions in a model of the hypothalamic-pituitary-adrenal axis", *Chaos*, 26 (2016) 033111.

**V. M. Marković**, Ž. Čupić, V. Vukojević, Lj. Kolar-Anić, "Predictive modeling of the hypothalamic-pituitary-adrenal (HPA) axis response to acute and chronic stress", *Endocrine Journal*, 58 (2011) 889-904.

A. Z. Ivanović-Šašić, **V. M. Marković**, S. R. Anić, Lj. Z. Kolar-Anić, Ž. D. Čupić, "Structures of chaos in open reaction systems", *Physical Chemistry Chemical Physics*, 13 (2011) 20162-20171.

**V. M. Marković**, Ž. Čupić, A. Ivanović, Lj. Kolar-Anić, "The Stability of the extended model of hypothalamic-pituitary-adrenal (HPA) axis examined by stoichiometric network analysis (SNA)" *Russ. J. Phys. Chem. A*, 85 (2011) 2327-2335.

I. Stanković, **V. M. Marković**, Lj. Kolar-Anić, "System with variable energy, volume and number of particles: evaluation of partition function and thermodynamic quantities", *Russ. J. Phys. Chem. A*, 85 (2011) 2257 - 2263.

## **Book Chapters**

Ž. Čupić, **V. Marković**, A. Ivanović, Lj. Kolar-Anić, "Modeling of the Complex Nonlinear Processes: Determination of the Instability Region by the Stoichiometric Network Analysis", in *Mathematical Modelling*, C. R. Brennan (ed.), Nova Science Publishers Inc., New York, 2013, pp. 111-178. ISBN: 978-1-61209-651-3

## **Peer-Reviewed Conference Papers**

A. Stanojević, **V. M. Marković**, Ž. Čupić, V. Vukojević, "Mathematical modeling of interleukin-6 effects on the hypothalamic-pituitary-adrenal axis", *Physical Chemistry 2016, 13th International Conference on Fundamental and Applied Aspects of Physical Chemistry*, The Society of Physical Chemists of Serbia, Belgrade, Serbia, Proceedings, Volume I, (2016) p. 323-326. ISBN 978-86-82475-34-7

A. Stanojević, **V. M. Marković**, Lj. Kolar-Anić, V. Vukojević, "Mathematical modeling of interactions between the central circadian clock, the hypothalamic-pituitary-adrenal (HPA) axis and alcohol", *Physical Chemistry 2016, 13th International Conference on Fundamental and Applied Aspects of Physical Chemistry*, The Society of Physical Chemists of Serbia, Belgrade, Serbia, Proceedings, Volume I, (2016) p. 351-354. ISBN 978-86-82475-34-7

A. Stanojević, Ž. Čupić, **V. M. Marković**, V. Vukojević, Lj. Kolar-Anić, Modelling the effects of the cholesterol-rich food intake on the hypothalamic-pituitary-adrenal (HPA) axis dynamics, *ECMTB - SMB 2016 - the joint meeting of the European Society for Mathematical and Theoretical Biology and the Society for Mathematical Biology*, European Society for Mathematical and Theoretical Biology and Society for Mathematical Biology, Nottingham, U.K. (2016) CT-14-AM-06 (one page).

A. Stanojević, **V. Marković**, Ž. Čupić, S. Maćešić, V. Vukojević, Lj. Kolar-Anić, "Mathematical Modeling of the Hypothalamic-Pituitary-Adrenal Axis Dynamics in Rats", in Book of Abstracts, Belgrade Bioinformatics Conference 2016, N. Mitić (ed.), Faculty of Mathematics, University of Belgrade, Belgrade, 2016, p. 99. ISBN:978-86-7589-108-6

A. Stanojević, Ž. Čupić, **V. M. Marković**, S. Maćešić, V. Vukojević, Lj. Kolar-Anić, Modeling the effects of stress on adrenal progesterone dynamics, 2nd International Symposium on Advances in PCOS and Women's Health, Serbian Society for Reproductive Endocrinology, Belgrade, Serbia, (2016) p. 47. ISBN: 978-86-919843-0-4

A. Stanojević, S. Maćešić, Ž. Čupić, **V. M. Marković**, V. Vukojević, Lj. Kolar-Anić, "Modelling perturbations of the hypothalamic-pituitary-adrenal axis with cholesterol pulses in the form of a normal distribution", *International WE-Heraeus Physics School on "Model systems for understanding biological processes"*, Bad Honnef, Germany, (2015) P27 (one page).

A. Stanojević, Lj. Kolar-Anić, Ž. Čupić, **V. M. Marković**, V. Vukojević, "Mathematical modelling of the influence of distribution of cholesterol concentration on the perturbations of hypothalamic-pituitary-adrenal axis", *3<sup>rd</sup> Congress of physiological sciences of Serbia with international participation - Molecular, Cellular and Integrative Basis of Health and Disease: Transdisciplinary Approach*, Serbian Physiological Society, Belgrade, Serbia, Abstract Book, (2014) p. 192.

A. Stanojević, Lj. Kolar-Anić, Ž. Čupić, **V. M. Marković**, V. Vukojević, "Effects of gradual cholesterol pulses with normally distributed intensity profiles on the hypothalamic-pituitary-adrenal (HPA) axis dynamics", in Physical Chemistry 2014 - Proceedings of the 12<sup>th</sup> International Conference on Fundamental and Applied Aspects of Physical Chemistry, Vol. 1, S. Anić and Ž. Čupić (eds.), The Society of Physical Chemists of Serbia, Belgrade, 2014, pp. 340-343. ISBN 978-86-82475-30-9

A. Stanojević, **V. M. Marković**, S. Maćešić, V. Vukojević, Ž. Čupić and Lj. Kolar-Anić, "Bifurcation Analysis of HPA Axis Dynamic States under Cholesterol Regulation", in Book of Abstracts, Theoretical Approaches to Bioinformation Systems, B. Dragovich (ed.), Institute of Physics, University of Belgrade, Belgrade, 2013, p. 30. ISBN:978-86-82441-37-3

**V. Marković**, A. Stanojević, S. Maćešić, Ž. Čupić, V. Vukojević and Lj. Kolar-Anić, "Dynamic States of Cortisol as a Function of Cholesterol Concentration in a Model of HPA Axis Dynamics", in Proceedings of the 4<sup>th</sup> International Congress of Serbian Society of Mechanics, S. Maksimović, T. Janjić and N. Trišović (eds.), Serbian Society of Mechanics, Belgrade, 2013, pp. 889-894. ISBN:978-86-909973-5-0

S. Maćešić, **V. M. Marković**, A. Ivanović-Šašić, Ž. Čupić and Lj. Kolar-Anić, "Bifurcation analysis of the oscillatory region of a hypothalamic-pituitary-adrenal (HPA) axis model", in Booklet of Abstracts, Symposium on Nonlinear Dynamics Milutin Milanković-Multidisciplinary and Interdisciplinary Applications, K. R. (Stevanović) Hedrih and Ž. Mijajlović (eds.), Serbian Scientific Society, Belgrade, 2012, pp. 113-114. ISBN: 978-86-7746-344-1

A. Ivanović-Šašić, **V. Marković**, Ž. Čupić, Lj. Kolar-Anić and S. Anić, "A new structure of chaos in the Bray-Liebhafsky oscillatory reaction", in Booklet of Abstracts, Symposium on Nonlinear Dynamics Milutin Milanković-Multidisciplinary and Interdisciplinary Applications, K. R. (Stevanović) Hedrih and Ž. Mijajlović (eds.), Serbian Scientific Society, Belgrade, 2012, pp. 115-116. ISBN: 978-86-7746-344-1

Lj. Kolar-Anić, Ž. Čupić, S. Jelić, **V. Marković**, S. Maćešić and V. Vukojević, "Hypothalamic-pituitary-adrenal (HPA) axis as nonlinear system with feedback", in Booklet of Abstracts, Symposium on Nonlinear Dynamics Milutin Milanković-Multidisciplinary and Interdisciplinary Applications, K. R. (Stevanović) Hedrih and Ž. Mijajlović (eds.), Serbian Scientific Society, Belgrade, 2012, pp. 121-122. ISBN: 978-86-7746-344-1

**V. M. Marković**, S. Maćešić, S. Damjanović and Lj. Kolar-Anić, "Inclusion of cholesterol in hypothalamic-pituitary-adrenal axis stoichiometric model", in Physical Chemistry 2012 – Proceedings of the 11<sup>th</sup> International Conference on Fundamental and Applied Aspects of Physical Chemistry, Vol. 1, S. Anić and Ž. Čupić (eds.), Society of Physical Chemists of Serbia, Belgrade, 2012, pp. 264-266. ISBN: 978-86-82475-27-9

S. Maćešić, **V. M. Marković**, A. Ivanović-Šašić and Ž. Čupić, "Optimization of a hypothalamic-pituitary-adrenal model with cholesterol", in Physical Chemistry 2012 – Proceedings of the 11<sup>th</sup> International Conference on Fundamental and Applied Aspects of Physical Chemistry, Vol. 1, S. Anić and Ž. Čupić (eds.), Society of Physical Chemists of Serbia, Belgrade, 2012, pp. 267-269. ISBN: 978-86-82475-27-9

**V. M. Marković**, Ž. Čupić, Lj. Kolar-Anić, "Modeling the time-delay between cortisol and ACTH in HPA axis under glucocorticoid perturbations", in Book of Abstracts, Regional Biophysics Conference 2012, J.

Zakrzewska, M. Živić and P. Andus (eds.), Biophysical Society of Serbia, Kladovo, 2012, p. 113. ISBN: 978-86-904161-2-7

Ž. D. Čupić, A. Z. Ivanović, S. R. Anić, G. Schmitz, **V. M. Marković**, Lj. Z. Kolar-Anić, "Critical manifold of an oscillatory reaction model with more than one fast variable", in Chaos 2011 Book of Abstracts, C. H. Skiadas (ed.), 4th Chaotic Modeling and Simulation International Conference, Agios Nikolaos, Crete, Greece, 2011, pp. 30-31.

**V. M. Marković**, A. Z. Ivanović, S. R. Anić, Ž. D. Čupić, Lj. Z. Kolar-Anić, " 'Structures' of deterministic chaos", in Chaos 2011 Book of Abstracts, C. H. Skiadas (ed.), 4th Chaotic Modeling and Simulation International Conference, Agios Nikolaos, Crete, Greece, 2011, pp. 84-85.

**V. Marković**, S. Jelić, V. Vukojević, Lj. Kolar-Anić, "Modelling the hypothalamic-pituitary-adrenal (HPA) axis response to external perturbations with cortisol", in Physical Chemistry 2010 – Proceedings of the 10<sup>th</sup> International Conference on Fundamental and Applied Aspects of Physical Chemistry, Vol. 1, S. Anić and Ž. Čupić (eds.), Society of Physical Chemists of Serbia, Belgrade, 2010, pp. 212-214. ISBN: 978-86-82475-17-0

**V. Marković** and Ž. Čupić, "Improved stoichiometric network analysis (SNA) of the model of hypothalamic-pituitary-adrenal (HPA) axis", in Physical Chemistry 2010 – Proceedings of the 10<sup>th</sup> International Conference on Fundamental and Applied Aspects of Physical Chemistry, Vol. 1, S. Anić and Ž. Čupić (eds.), Society of Physical Chemists of Serbia, Belgrade, 2010, pp. 239-241. ISBN: 978-86-82475-17-0

Ž. Čupić, **V. Marković**, Lj. Kolar-Anić, "Stoichiometric networks: from reaction routes to metabolic fluxes and backward", in Physical Chemistry 2010 – Proceedings of the 10<sup>th</sup> International Conference on Fundamental and Applied Aspects of Physical Chemistry, Vol. 1, S. Anić and Ž. Čupić (eds.), Society of Physical Chemists of Serbia, Belgrade, 2010, pp. 200-208. ISBN: 978-86-82475-17-0

## **Other Publications**

Ž. Čupić, Lj. Kolar-Anić, S. Anić, S. Maćešić, I.-N. M. Bubanja, N. Pejić, D. Stanisavljev, M. Milenković A. Ivanović-Šašić, **V. Marković**, E. Greco, R. Cervellati, "Nonlinear dynamics of oscillatory chemical reactions related to antioxidant activity of food and pharmaceuticals", in Serbia-Italia - Italian-Serbian Bilateral Cooperation on Science, Technology and Humanities, P. Battinelli and J. Striber (eds.), SIGRa star, Belgrade, 2013, pp. 121-124. ISBN 978-86-7522-048-0

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## **PROJECTS AND SCIENTIFIC COOPERATION**

**EPSRC Healthcare Technologies Impact Fellowships**  
**EP/N033655/1**

***"Personalised Pulsatile Materials (PPM)"***

**Newcastle University, UK**

<http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/N033655/1>

duration:

December 1<sup>st</sup>, 2016 – November 30<sup>th</sup>, 2018

role: partner institution participant

funded by:

EPSRC, UK

**COST Action CM1304**

duration:

***“Emergence and Evolution of  
Complex Chemical Systems”***  
<http://www.systemschemistry.com/cm1304/>

December 3<sup>rd</sup>, 2013 – December 2<sup>nd</sup>, 2017  
role: member of the Managing Committee  
and participant

**Project No. 172015 “Dynamics of Nonlinear  
Physicochemical  
and Biochemical Systems with Modeling  
and Predicting their Behavior  
under Non-equilibrium Conditions”**  
University of Belgrade, Serbia

duration:  
January, 2011 – ongoing  
funded by:  
Ministry of Education, Science and  
Technological Development, Serbia,  
role: participant

**Project No. 142025 “Physical Chemistry of  
Non-equilibrium Systems’ Dynamic States  
and Structures – from Monotonic to  
Oscillatory Evolution and Chaos”**  
University of Belgrade, Serbia

duration:  
January, 2006 – December, 2010  
funded by:  
Ministry of Science and Technological  
Development, Serbia,  
role: participant

**COST Action CM0701  
“Cascade Chemoenzymatic Processes –  
New Synergies Between Chemistry  
and Biochemistry”**

duration:  
April 18<sup>th</sup>, 2008 – April 17<sup>th</sup>, 2012  
role: participant

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## RESEARCH VISITS

**August 2017 – September 2017 (five weeks)**  
School of Engineering  
Newcastle University, Newcastle upon Tyne, U.K.

Visiting Researcher

**February 2017 – March 2017 (one month)**  
Department of Chemical and Physical Engineering  
University of Sheffield, Sheffield, U.K.

Visiting Researcher

**March 2015 – December 2015**  
National Institute of Health  
(Istituto Superiore di Sanità), Rome, Italy

Visiting Researcher

**November 2011 – February 2012**  
Center for Molecular Medicine, Karolinska Institute  
(Centrum för Molekylär Medicin, Karolinska Institutet),  
Stockholm, Sweden

Visiting Graduate Student

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## CONFERENCE PARTICIPATION

### 2017

**SysChem (Systems Chemistry) 2017 Conference -  
Cost Action CM 1304  
Sopron (Hungary), September 2017**

oral presentation:

*"Modeling hypothalamic-pituitary-adrenal axis dynamical response induced by cholesterol concentration pulses"*

**XXXVII Dynamics Days - Dynamics Days Europe  
International Conference  
Szeged (Hungary), June 2017**

oral presentation:

*"Modeling hypothalamic-pituitary-adrenal axis dynamics under various forms of externally and internally induced cholesterol perturbations"*

### 2016

**Physical Chemistry 2016 - 13th International  
Conference on Fundamental and Applied Aspects  
of Physical Chemistry  
Belgrade (Serbia), September 2016**

poster presentation:

*"Mathematical modeling of interleukin 6 effects on the hypothalamic-pituitary-adrenal axis"*

*"Mathematical modeling of interactions between the central circadian clock, the hypothalamic-pituitary-adrenal (HPA) axis and alcohol"*

### 2014

**Physical Chemistry 2014 - 12th International  
Conference on Fundamental and Applied Aspects  
of Physical Chemistry  
Belgrade (Serbia), September 2014**

poster presentation:

*"Effects of gradual cholesterol pulses with normally distributed intensity profiles on the hypothalamic-pituitary-adrenal (HPA) axis dynamics"*

**SYSCHEM (Systems Chemistry) 2014 - Cost Action  
CM 1304 Meeting  
San Sebastian (Spain), June 2014**

oral presentation:

*"Modeling hypothalamic-pituitary-adrenal axis as an open reaction system"*

### 2013

**Theoretical Approaches to Bioinformation Systems  
– TABIS 2013,  
Belgrade (Serbia), September 2013**

poster presentation:

*"Bifurcation Analysis of HPA Axis Dynamic States under Cholesterol Regulation"*

### 2012

**Symposium on Nonlinear Dynamics Milutin  
Milanković - Multidisciplinary and Interdisciplinary  
Applications  
Belgrade (Serbia), October 2012**

oral presentation:

*"A new structure of chaos in the Bray-Liebhafsky oscillatory reaction"*

**Physical Chemistry 2012 - 11th International**

poster presentation:



**Conference on Fundamental and Applied Aspects  
of Physical Chemistry  
Belgrade (Serbia), September 2012**

*"Inclusion of cholesterol in hypothalamic-pituitary-adrenal axis stoichiometric model"*

**Regional Biophysics Conference 2012  
Kladovo (Serbia), September 2012**

poster presentation:

*"Modeling the time-delay between cortisol and ACTH in HPA axis under glucocorticoid perturbations"*

**2011**

**4<sup>th</sup> Chaotic Modeling and  
Simulation International Conference  
Agios Nikolaos, Crete (Greece), May/June 2011**

oral presentation:

*"'Structures' of deterministic chaos"*

**2010**

**Physical Chemistry 2010 - International Conference  
on Fundamental and Applied Aspects of Physical  
Chemistry  
Belgrade (Serbia), September 2010**

oral presentation:

*"Modelling the hypothalamic-pituitary-adrenal (HPA) axis response to external perturbations with cortisol"*

poster presentation:

*"Improved stoichiometric network analysis (SNA) of the model of hypothalamic-pituitary-adrenal (HPA) axis"*

**14th International Biotechnology Symposium and  
Exhibition IBS 2010, Biotechnology for  
Sustainability of Human Society,  
Rimini (Italy), September 2010**

oral presentation:

*"Modeling of biochemical processes"*

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## **EXTRACURRICULAR COURSES ATTENDED**

**2016**

**November 4<sup>th</sup> – November 8<sup>th</sup>  
Institute For Theoretical Chemistry  
Vienna, Austria**

COST Action CM1304 Training School:

***"Computational approaches in systems chemistry"***

**2012**

**Faculty of Biology,  
University of Belgrade, Serbia**

***"Methods on the Interface of Neurochemistry and Electrophysiology"*** (2 ECTS credits)

**2011**

**Karolinska Institute, Stockholm, Sweden**

***"Functional Fluorescence Microscopy Imaging (fFMI) in Biomedical Research"*** (3 ECTS credits)

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## SOFT SKILLS COURSES ATTENDED

**2016**

February 19<sup>th</sup> – February 27<sup>th</sup>  
European Training Academy  
Belgrade

*"Excellence in HORIZON 2020 Project  
Development and Implementation"*

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## AWARDS AND ACKNOWLEDGEMENTS

**2011**

Rajko and Maj Djermanovic Fund Scholarship

awarded by:  
Royal Swedish Academy of Sciences

**2010**

Special Acknowledgement for 2010 for  
outstanding achievement during studies at the  
Faculty of Physical Chemistry,  
University of Belgrade

awarded by:  
Serbian Chemical Society

"Pavle Savić Diploma" for 2010 for outstanding  
success achieved in the field of Physical  
Chemistry

awarded by:  
Society of the Physical Chemists of Serbia

**2009**

"Crown of Success Prize" for 2009  
(the award for the two best students (a male and a  
female) at the University of Belgrade)

awarded by:  
The Petrović Family Fund in collaboration with the  
Embassy of Switzerland in Belgrade

**2008**

"Eurobank EFG Scholarship"  
(awarded to 100 best undergraduate students at  
Serbia's State Universities)

awarded by:  
Eurobank EFG

**2007-2009**

Stipend beneficiary of the State Foundation for  
Scientific and Artistic  
Youth Development

awarded by:  
Ministry of Education, Science and Technological  
Development of the Republic of Serbia

**2004**

"The Written Commendation of the Karađorđevićs  
Royal Home" for the outstanding achievements  
during  
high-school education

awarded by:  
Karađorđević Serbian Royal Family

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## LANGUAGES

English (proficient)

German (C1)

Serbian (mother tongue)

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## SOCIETY MEMBERSHIPS

Society of Physical Chemists of Serbia

Biophysical Society of Serbia

Serbian Chemical Society

Mensa of Serbia

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## OTHER RELEVANT FORMAL EDUCATION

**1994-2000**

Elementary Music School "Jovan Bandur", Pančevo,  
Serbia

instrument:  
the classical guitar

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## INFORMAL INTERESTS AND ACTIVITIES

fitness, cinematography, bioethics

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