



Stipe Lukin

Date of birth: 31/12/1991 | **Nationality:** Croatian | **Gender:** Male | (+385) 0989750029 |

stipe.lukino@yahoo.com | <https://www.irb.hr/eng/People/Stipe-Lukin> | <https://www.linkedin.com/in/stipe-lukin/> |

<https://twitter.com/LukinStipe> | Dubrava 158, 10040, Zagreb-Dubrava, Croatia

● WORK EXPERIENCE

10/2016 – CURRENT – Zagreb, Croatia

RESEARCH ASSISTANT – RUĐER BOŠKOVIĆ INSTITUTE

Laboratory for Green Synthesis, Division of Physical Chemistry

Main activities:

- development of real-time and *in situ* monitoring techniques for mechanochemical reactions based on Raman and powder X-Ray diffraction
- chemometric data analysis (multivariate analysis, PCA, Factor analysis, correlation analysis)
- mechanochemical synthesis of MOFs and pharmaceutical cocrystals
- literature review and manuscript preparations

www.irb.hr | Bijenička Cesta 54, 10000, Zagreb, Croatia

05/2013 – 10/2016 – Zagreb, Croatia

EXTRACURRICULAR SCIENTIFIC RESEARCH – RUĐER BOŠKOVIĆ INSTITUTE

Scientific research during the undergraduate studies at the Laboratory for Green Synthesis.

Main activities:

- reactivity in the solid state
- *in situ* Raman spectroscopy monitoring of mechanochemical reactions

Zagreb, Croatia

● EDUCATION AND TRAINING

10/2016 – 09/2019 – Horvatovac 102a, Zagreb, Croatia

PHD – University of Zagreb, Faculty of Science

Field: **Physical Chemistry**

Title of the dissertation: Method development for *in situ* monitoring of mechanochemical reactions by Raman spectroscopy and powder X-ray diffraction

PhD advisor: dr. sc. Ivan Halasz

10/2014 – 07/2016 – Horvatovac 102a, Zagreb, Croatia

MASTERS OF SCIENCE - CHEMISTRY – University of Zagreb, Faculty of Science

Graduate field: **Physical chemistry** and **Biochemistry**

Master thesis: Mechanochemical cocrystal formation studied by *in situ* Raman spectroscopy

Thesis advisor: dr. sc. Ivan Halasz

Internship in the prof. Modesto Orozco's group for Molecular Modelling and Bioinformatics in Division for Structural and Computational Biology under the supervision of dr. Antonija Kuzmanić.

Main activities:

- molecular dynamics of DNA crystal systems
- work in MD simulation software (Gromacs and Amber)

www.irbbarcelona.org

Final exam thesis: Molecular Dynamics - computational method

Thesis advisor: prof. dr. sc. Branimir Bertoša

● LANGUAGE SKILLS

Mother tongue(s): **CROATIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1
ITALIAN	A2	A2	A1	A1	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● PUBLICATIONS

Selected publications

1. **S. Lukin**, T. Stolar, M. Tireli, M. Blanco, D. Babić, T. Frišćić, K. Užarević, I. Halasz, Tandem *in situ* monitoring for quantitative assessment of mechanochemical reactions involving structurally unknown phases, *Chemistry: a European Journal*, **2017**, 23, 13941-13949.
2. **S. Lukin**, I. Lončarić, M. Tireli, T. Stolar, M. V. Blanco, P. Lazić, K. Užarević, I. Halasz, Experimental and Theoretical Study of Selectivity in Mechanochemical Cocrystallization of Nicotinamide with Anthranilic and Salicylic Acid, *Crystal Growth & Design*, **2018**, 18(3), 1539-1547.
3. A. Bjelopetrović, **S. Lukin**, I. Halasz, K. Užarević, I. Đilović, D. Barišić, A. Budimir, M. Juribašić Kulscar, M. Čurić, Mechanism of Mechanochemical C-H Bond Activation in an Azobenzene Substrate by Pd(II) Catalysts, *Chemistry: a European Journal*, **2018**, 24(42), 10672-10682.
4. **S. Lukin**, M. Tireli, I. Lončarić, D. Barišić, P. Šket, D. Vrsaljko, M. Di Michiel, J. Plavec, K. Užarević, I. Halasz, Mechanochemical carbon-carbon bond formation that proceeds via a cocrystal intermediate, *Chemical Communications*, **2018**, 54, 13216-13219.
5. **S. Lukin**, M. Tireli, T. Stolar, D. Barišić, M. V. Blanco, M. Di Michiel, K. Užarević, I. Halasz, Isotope Labeling Reveals Fast Atomic and Molecular Exchange in Mechanochemical Milling Reactions, *Journal of the American Chemical Society*, **2019**, 141(3), 1212-1216.
6. **S. Lukin***, K. Užarević, I. Halasz, Raman spectroscopy for real-time and in situ monitoring of mechanochemical milling reactions. *Nature Protocols*, **2021**, 16, 3492–3521.

● DRIVING LICENCE

Driving Licence: B

● CONFERENCES AND SEMINARS

Conferences

6. **S. Lukin**, I. Halasz, Isotope labeling in mechanochemical milling reactions, *Solid-State Science and Research*, 2019, Zagreb, Croatia - **Oral presentation**

5. **S. Lukin**, T. Stolar, M. Tireli, M. V. Blanco, D. Babić, T. Friščić, I. Halasz, K. Užarević, Quantitative in situ monitoring of mechanochemical polymorph selectivity, *Solid-State Science and Research*, 2017, Zagreb, Croatia - **Oral presentation**

4. **S. Lukin**, T. Stolar, M. Tireli, M. Di Michiel, I. Halasz, K. Užarević, Solvent-free synthesis of pharmaceutically active compounds, *The 1st European PhD & PostDoc Symposium*, 2017, Barcelona, Spain - **Poster**

3. **S. Lukin**, T. Stolar, M. Tireli, M. V. Blanco, D. Babić, T. Friščić, K. Užarević, I. Halasz, Quantitative *in situ* monitoring of mechanochemical selectivity in pharmaceutical cocrystal polymorphs, *INCOME2017 - 9th International Conference on Mechanochemistry and Mechanical Alloying*, 2017, Košice, Slovakia - **Oral presentation**

2. T. Stolar, **S. Lukin**, J. Požar, K. Užarević, E. Meštrović, I. Halasz, Solid-state chemistry and polymorphism of the nucleobase adenine, *The Twenty-fourth Croatian-Slovenian Crystallography Meeting*, 2016, Bol, Croatia - **Oral presentation**

1. **S. Lukin**, T. Stolar, K. Užarević, I. Halasz, Mechanochemical cocrystal formation studied by in situ Raman spectroscopy, *The Twenty-fourth Croatian-Slovenian Crystallography Meeting*, 2016, Bol, Croatia - **Oral presentation**

● HONOURS AND AWARDS

Honours and awards

2019 - Annual award of Society of university teachers, scholars, and other scientists for **publishing a high-impact** scientific paper „Isotope labeling reveals fast atomic and molecular exchange in mechanochemical milling reactions“

2019 - Two annual awards of Ruđer Bošković Institute for **scientific publication with a high impact factor in 2018** awarded by the Director General of the Institute

2018 - Annual award of Ruđer Bošković Institute for **scientific publication with a high impact factor in 2017** awarded by the Director General of the Institute

2014 - **Rector's Award** of University of Zagreb for **student scientific research**

2014 - Department of Chemistry award in acknowledgment of **extracurricular scientific research**

2013 - **Group Rector's Award** of the University of Zagreb for participation in the organization of the Open Day of Chemistry Department

● ORGANISATIONAL SKILLS

Organisational skills

I participated in the organization of three Open days of Chemistry Department and two Open days of Ruđer Bošković Institute events.

I was an organizer and lecturer at COST Action CA18112 MechSustInd Training School in Zagreb, hosted by Ruđer Bošković Institute, 24th - 27th Feb 2020.

● COMMUNICATION AND INTERPERSONAL SKILLS

Communication and interpersonal skills

I presented at several scientific conferences and popular television series.

The dynamic professional environment has given me opportunities for the development of "soft skills" needed for daily communications with my peers and industry representatives.

ERASMUS+ and CLIMATE-KIC internships provided me with the experience of managing in a foreign country and an international environment.

I was a lecturer in three-day COST Action CA18112 MechSustInd Training School 2020 "In situ monitoring of mechanochemical reactions by powder X-ray diffraction using powder X-ray diffraction and Raman spectroscopy".

● JOB-RELATED SKILLS

Job-related skills

- crystal structure refinement and elucidation from the powder XRD data
- overall 32 days of synchrotron beamtime at ESRF in Grenoble (ID15A and ID31 beamlines) and DESY in Hamburg (P02.1 beamline)
- chemometric analysis (multivariate analysis, PCA, Factor Analysis, correlation analysis)
- data manipulation software (OriginPro, *etc.*)
- programming languages (C (basic), Matlab (advanced), Python (intermediate), Mathematica (basic))
- spectroscopic methods (FTIR, Raman, XRD, NMR, *etc.*)
- use of various chemical software
- Linux, Windows operating systems
- Latex, MS office

● PRESENTATIONS

Presentations

Invited lecture at the National Institute of Chemistry in Ljubljana, Slovenia by dr. Blaž Likozar, Head of the Department of Catalysis and Chemical reaction Engineering (4th October 2018). title of the lecture: "In situ monitoring of chemical reactions in the solid state".

● ADDITIONAL TRAINING AND EDUCATION

Courses / placements / Administrative and Advisory Work

Hot Topics in Contemporary Crystallography - workshop, Bol, Croatia, 24 - 25 Sep 2018

WIPO – Croatia Summer School on Intellectual Property, Zagreb, Croatia, 27 May - 7 Jun 2019

EU Climate KIC Pioneers into practice program - REGEA, Zagreb, May 2019 - October 2019

- workshops, online courses, group project - Urban heat islands
- Assembly of the proposal for the Appendix for Sustainable Energy and Climate Action Plan (SECAP) in the case of the City of Zagreb, a relevant document-policy for lowering of CO₂ emissions by the year 2020.

Climate KIC Pioneers into practice placement - Gelatex Technologies, Tallin, Estonia, Oct 2019

- 4 weeks placement in an Estonian startup
- development of the technology for gelatin nanofibers production

Basics of programming - workshop, SRCE, Zagreb, Croatia, 2-6 Jul 2019

Quantum Espresso - Summer school on Advanced Materials and Molecular Modelling, Jožef Stefan Institute, Ljubljana, Slovenia, 16-20 Sep 2019

Winter school of research commercialization, EIT Health, University of Zagreb, Croatia, 28-30 Nov 2019

Space powering the Green Deal and the Digital Economy – workshop, Zagreb, Croatia, 5-6 Mar 2020

Copernicus MOOC - Earth Observation data, 9 Mar - 16 Jun 2020

- 12 weeks online course