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Education

- 2014-present** M.Sc. studies at the Faculty of Chemistry, University of Warsaw
- 2013-present** M.Sc. studies at the Faculty of Physics, University of Warsaw
- 2011-2014** B.Sc., **Chemistry**, University of Warsaw, Faculty of Chemistry (with distinction)
- *Quantum chemistry simulation of dependence of the vicinal coupling constants $J(^1\text{H}-^{199}\text{Hg})$ and $J(^1\text{H}-^{205}\text{Tl})$ on the dihedral angle*; supervised by dr hab. Magdalena Pecul-Kudelska, prof. UW.
- 2010-2013** B.Sc., **Physics**, University of Warsaw, Faculty of Physics (with distinction)
- *Synthesis and properties of nucleotides labeled with pyrene within oligophosphate chain*; supervised by dr hab. Jacek Jemielity, prof. UW.

Research Interests

- Fluorescent labeling of the nucleotides and their spectroscopic properties.
- Synthesis and properties of molecular probes based on nanomaterials.
- Interactions cap-protein.
- Molecular spectroscopy in bioorganic chemistry.
- Quantum mechanics calculations in spectroscopy.

Publications and Patents

- „Synthesis and properties of nucleotides bearing a fluorophosphate moiety” Joanna Kowalska, Marek R. Baranowski, Anna Nowicka, **Renata Kasprzyk**, Joanna Zuberek, Jacek Wójcik, Jacek Jemielity, XVIth Symposium on Chemistry of Nucleic Acid Components Cesky Krumlov Czech Republic, Institute of Organic Chemistry and Biochemistry Academy of Sciences of Czech Republic 8-13.06.2014, Volume 14, 2014, ISBN 978-80-86241-50-0
- Joanna Kowalska, Jacek Jemielity, Marek R. Baranowski, Anna Nowicka, **Reneta Kasprzyk**, „Fluorophosphate analogs of mRNA 5' end (cap), their preparation and applications” -Polish patent application, 28.01.2014, Nr P406893

Ongoing Research Support

0161/DIA/2014/43

PI: Renata Kasprzyk

2014-2018

Grant from Ministry of Science and Higher Education

Molecular probes for studying proteins bonding 5' end of mRNA based on pyrene and modified graphene.

Role: PI

Research Experience

July 2012 one month training in prof. Jacek Jemielity Group at the Faculty of Physics, University of Warsaw, Warsaw, Poland – synthesis of nucleotide analogs with fluorophosphate moiety.

August 2012 one month training on prof. Jacek Wójcik supervisor in Institute of Biochemistry and Biophysics, Polish Academy of Science, Warsaw, Poland - teaching on principles in magnetic resonance spectroscopy (NMR).

July 2013 one month training in prof. Jacek Jemielity Group at the Faculty of Physics, University of Warsaw, Warsaw, Poland – synthesis and properties characterization of pyrene labeled nucleotides.

July 2014 one month training in prof. Jacek Jemielity Group at the University of Warsaw. Faculty of Physics, Warsaw, Poland – studies on fluorescence of the pyrene labeled nucleotides and their interactions with proteins bonding 5' end of mRNA.

Distinctions and Awards

- Best Poster Presentation Award on the 57th Annual Meeting of the Polish Chemical Society (PTChem) and the Association of Engineers and Technicians of Chemical Industry (SiTPChem), Częstochowa, September 2014.
- 3rd place in the III Edition of "Golden Medal of Chemistry competition" for the best B.Sc. thesis, Organized by the Institute of Physical Chemistry, Polish Academy of Sciences (2013).
- Special Award from DuPont Company in the finals of "Golden Medal of Chemistry" (2013).
- Ministry of Science and Higher Education fellowship for young scientists (2012-2013, 2013-2014).
- Scholarship at the Faculty of Physics at University of Warsaw (2010-2013) and at Faculty of Chemistry (2013-2014).
- Scientific Rector scholarship at the University of Warsaw for the Best Students (2011-2012, 2012-2013, 2013-2014).

Conferences

- Kasprzyk R., Baranowski M. R., Osówniak A., Kowalska J., Jemielity J., *Synthesis of fluorophosphate analogs of nucleoside mono-, di- and triphosphates*, **poster**, 13th Tetrahedron Symposium, Amsterdam.
- Kowalska J., Baranowski M. R., Kasprzyk R., Osówniak A., Jemielity J., *Synthesis of Nucleotides Bearing Fluorophosphate Moiety and Their Non Hydrolyzable Analogs Useful Probes for NMR Studies*, **poster**, International Round Table on Nucleosides, Nucleotides & Nucleic Acids, Montreal (5-9.08.2012).
- Kasprzyk R., Kowalska J., Jemielity J., *Synteza mononukleotydowych analogów końca 5' mRNA znakowanych pirenem*, **poster**, 55. PTChem-SITPChem Symposium, Białystok (16-20.09.2012).
- Baranowski M. R., Kasprzyk R., Osówniak A., Kowalska J., Jemielity J., *Synteza fluorofosforanowych analogów mono-, di- i trifosforanów nukleozydów*, **poster**, 55. PTChem-SITPChem Symposium, Białystok (16-20.09.2012).
- Kowalska J., Wojtczak B., Strenkowska M., Ziemiak M., Baranowski M.R., Dąbrowski-Tumański P., Fac K., Kasprzyk R., Nowakowska M., Osówniak A., Tomaszewicz Z., Ubych K., Walczak S., Wanat P., Warmiński M., Jemielity J., *Chemicznie modyfikowane analogi nukleotydów jako różnorodne narzędzia do badań biofizycznych i biochemicznych oraz potencjalne terapeutyki*, **poster**, I Ogólnopolskie Sympozjum Interdyscyplinarne Inter-Mix 2013, Pułtusk (21-24.03.2013).
- Kasprzyk R., Kowalska J., Jemielity J., *Synteza analogów nukleotydów znakowanych pirenem i badanie ich właściwości spektroskopowych*, **poster**, Ogólnopolskie Studenckie Mikrosympozjum Chemików „Chemia-przyszłość zaczyna się dziś” II edycja, Białystok (17-19.05.2013).
- Baranowski M., Kasprzyk R., Osówniak A., Kowalska J., Jemielity J., *Fluorofosforanowe analogi*

nukleotydów, jako narzędzia do badania enzymów o aktywności pirofosfataz, poster, Ogólnopolskie Studenckie Mikrosymposium Chemików „Chemia-przyszłość zaczyna się dziś” II edycja, Białystok (17-19.05.2013).

- Kasprzyk R., Kowalska J., Jemielity J., *Synthesis and properties studies of pyrene labeled mononucleotide analogs of 5' end mRNA, poster*, II International Conference of Biophysics Students, Kraków, Poland (24-26.05.2013).
- Baranowski M.R., Kasprzyk R., Osówniak A., Kowalska J., Jemielity J., *Fluorophosphate nucleotide analogs as a useful tool to study enzyme activity of pyrophosphatase, poster*, II International Conference of Biophysics Students, Kraków, Poland (24-26.05.2013).
- Kasprzyk R., Fac K., Kowalska J., Jemielity J., *S-alkylation of the terminal thiophosphate moiety as a route of a variety of modified mono- and dinucleotides, poster*, 14th Tetrahedron Symposium, Vienna, Austria (25-28.06.2013).
- Baranowski M.R., Kasprzyk R., Osówniak A., Wójcik J., Kowalska J., Jemielity J., *Synthesis of fluorophosphate nucleotide analogues - useful compounds for enzymatic and ¹⁹F NMR studies, poster*, 14th Tetrahedron Symposium, Vienna, Austria (25-28.06.2013).
- Kasprzyk R., Kowalska J., Jemielity J., *Synteza, właściwości oraz potencjalne zastosowania mononukleotydowych analogów końca 5' mRNA znakowanych pirenem, oral communication*, 56. PTChem-SITPChem Symposium, Siedlce (16-20.09.2013).
- Kasprzyk R., Kowalska J., Jemielity J., *Pyrene labeled 5' end mRNA analogs as molecular probes for studies on cap-binding proteins, poster*, III International Conference of Biophysics Students, Kraków, Poland (23-25.05.2014).
- Kasprzyk R., Kowalska J., Jemielity J., *Molecular probes based on mRNA cap analogs labeled with pyrene as a tools for studies on cap-binding proteins, poster*, XXI Round Table on Nucleosides, Nucleotides and nucleic acids, chemical biology of nucleic acids, Poznań, Polska (24-28.08.2014).
- Marek R. Baranowski, Anna Nowicka, Renata Kasprzyk, Jacek Wojcik, Joanna Kowalska Jnd Jacek Jemielity, *(oligo)nucleotides bearing fluorophosphate moiety – synthesis, biological properties and ¹⁹F NMR studies, poster*, XXI Round Table on Nucleosides, Nucleotides and nucleic acids, chemical biology of nucleic acids, Poznań, Polska (24-28.08.2014).
- Kasprzyk R., Kowalska J., Stolarski R., Jemielity J., *Analogi kapu znakowane pirenem jako sondy molekularne do badań białek wiążących koniec 5' mRNA, poster*, 57. PTChem-SITPChem Symposium, Częstochowa (14-18.09.2014).