

## MARCIN KAŁEK, Ph.D.

(updated 2024/10/21)

### PERSONAL DETAILS

Date and place of birth:

May 17th 1983, Łódź, Poland

Nationality:

Polish

ORCID:

0000-0002-1595-9818

Affiliation and official address:

University of Warsaw

Centre of New Technologies

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### EDUCATION AND PROFESSIONAL EXPERIENCE

**2024 – present**

**Associate professor**

Centre of New Technologies, University of Warsaw

**2016 – 2024**

**Assistant professor**

Centre of New Technologies, University of Warsaw

**Jun 2015 – Aug 2015**

**Researcher**

Department of Organic Chemistry, Arrhenius Laboratory, Stockholm University

**2013 – 2015**

**Postdoctoral fellow (asymmetric organocatalysis)**

Division of Chemistry and Chemical Engineering, California Institute of Technology (with Prof. Gregory C. Fu)

**2011 – 2013**

**Postdoctoral fellow (computational chemistry)**

Department of Organic Chemistry, Arrhenius Laboratory, Stockholm University (with Prof. Fahmi Himo)

**2006 – 2011**

**Graduate student (Ph.D.)**

Department of Organic Chemistry, Arrhenius Laboratory, Stockholm University (with Prof. Jacek Stawiński)

Thesis: "Synthesis of C(sp<sup>2</sup>)-P bonds by palladium-catalyzed reactions. Mechanistic investigation and synthetic studies"

**Jan 2006 – Sep 2006**

**Marie Curie fellow in the Early Stage Research Training** (under EU 6th Framework Program)

Nucleic Acid Center, University of Southern Denmark, Odense (with Prof. Jesper Wengel)

**2002 – 2005**

**Undergraduate student (M.Sc., with honors)**

Centre for Interfaculty, Individual Studies in Mathematical and Natural Sciences,  
University of Warsaw (with Dr. Jacek Jemielity/ Dr. Janusz Stępiński)  
Thesis: "Synthesis of mRNA 5' cap analogs resistant to enzymatic degradation"

## AWARDS AND SCHOLARSHIPS

- 2022 Thieme Chemistry Journals Award
- 2021 Distinction of the Rector of the University of Warsaw
- 2019 Representing Poland in the EuChemS Div. of Org. Chem. Young Investigator Workshop, Austria
- 2018 M. Mąkosza Foundation Scientific Award
- 2018 Representing Poland in the 1st ChemPubSoc Europe Early Career Researcher Meeting, Germany
- 2017 Minister of Science and Higher Education Fellowship for Outstanding Young Scientists
- 2012 Swedish Research Council International Postdoc Fellowship
- 2010 Swedish Chemical Society travel grant
- 2010 C. F. Liljevalch Jr. travel scholarship
- 2009 AstraZeneca Nils Löfgren Memorial Award
- 2009 4th ICIQ Summer School participation grant
- 2008 IS3NA-SNAC travel award
- 2008 J.-A. Ekströms Foundation donation grant
- 2007 K. & A. Wallenbergs Foundation travel scholarship
- 2005 Marie Curie fellowship for Early Stage Research Training (under 6th EU FP)
- 2004 Minister of Education of Poland Awards for outstanding achievements during undergraduate studies
- 2003 Minister of Education of Poland Awards for outstanding achievements during undergraduate studies
- 2002 Minister of Education of Poland Award for outstanding achievements during high school education
- 2002 4th place and a gold medal on the 34th International Chemistry Olympiad, Groningen, the Netherlands

## RESEARCH FUNDING

- 2021 – 2026 National Science Centre – Poland (NCN) grant Opus  
@ University of Warsaw  
2 599 680 PLN
- 2017 – 2023 National Science Centre – Poland (NCN) grant Sonata Bis  
@ University of Warsaw  
1 996 800 PLN
- 2015 – 2019 National Science Centre – Poland (NCN) grant Sonata  
@ University of Warsaw

975 360 PLN

2013 – 2015 Swedish Research Council (*Vetenskapsrådet*) International Postdoc Grant  
@ California Institute of Technology and Stockholm University  
2 362 500 SEK

## SERVICE TO RESEARCH COMMUNITY

Reviewer for scientific journals:

*Accounts of Chemical Research, ACS Catalysis, ACS Omega, ACS Organic & Inorganic Au, Angewante Chemie International Edition, Asian Journal of Organic Chemistry, Beilstein Journal of Organic Chemistry, Chemical Papers, Chemistry - An Asian Journal, Chemistry - A European Journal, ChemCatChem, Chemical Engineering Journal, ChemistryOpen, ChemPhysChem, ChemisitrySelect, European Journal of Organic Chemistry, Helvetica Chimica Acta, Journal of the American Chemical Society, Journal of Organic Chemistry, Nature Communications, New Journal of Chemistry, Organic Letters, Organometallics, Synthetic Communications*

Reviewer for 3 doctoral theses

Expert for:

*National Science Centre – Poland (NCN), Polish National Agency for Academic Exchange (NAWA)*

## CITATION METRICS (Scopus)

Sum of times cited: **1766**

Sum of times cited without self-citations: **1709**

H-index: **25**

## PUBLICATION LIST

### I. Articles and book chapters

1. Kalek, M.; Jemielity, J.; Stepinski, J.; Stolarski, R.; Darzynkiewicz, E.  
“A direct method for the synthesis of nucleoside 5'-methylenebis(phosphonate)s from nucleosides”  
*Tetrahedron Lett.* **2005**, *46*, 2417-2421.
2. Stepinski, J.; Zuberek, J.; Jemielity, J.; Kalek, M.; Stolarski, R.; Darzynkiewicz, E.  
“Novel dinucleoside 5',5'-triphosphate cap analogues and affinity for murine translation factor eIF4E”  
*Nucleosides Nucleotides Nucleic Acids* **2005**, *24*, 629-633.
3. Kalek, M.; Jemielity, J.; Grudzien, E.; Zuberek, J.; Bojarska, E.; Cohen, L. S.; Stepinski, J.; Stolarski, R.; Davies, R. E.; Rhoads, R. E.; Darzynkiewicz, E.  
“Synthesis and biochemical properties of novel mRNA 5' cap analogs resistant to enzymatic hydrolysis”  
*Nucleosides Nucleotides Nucleic Acids* **2005**, *24*, 615-621.

4. Grudzien, E.; Kalek, M.; Jemielity, J.; Darzynkiewicz, E.; Rhoads, R. E.  
"Differential inhibition of mRNA degradation pathways by novel cap analogs"  
*J. Biol. Chem.* **2006**, *281*, 1857-1867.
5. Kalek, M.; Jemielity, J.; Darzynkiewicz, Z. M.; Bojarska, E.; Stepinski, J.; Stolarski, R.; Davies, R. E.; Darzynkiewicz, E.  
"Enzymatically stable 5' mRNA cap analogs: synthesis and binding studies with human DcpS decapping enzyme"  
*Bioorg. Med. Chem.* **2006**, *14*, 3223-3330.
6. Kalek, M.; Madsen, A. S.; Wengel, J.  
"Effective modulation of DNA-duplex stability by reversible transition metal complex formation in the minor groove"  
*J. Am. Chem. Soc.* **2007**, *129*, 9392-9400.
7. Kalek, M.; Stawinski, J.  
"Pd(0)-catalyzed phosphorus-carbon bond formation. Mechanistic and synthetic studies on the role of the palladium sources and anionic additives."  
*Organometallics* **2007**, *26*, 5840-5847.
8. Darzynkiewicz, Z. M.; Bojarska, E.; Kowalska, J.; Lewdorowicz, M; Jemielity, J.; Kalek, M.; Stepinski, J.; Davis R. E.; Darzynkiewicz E.  
"Interaction of human decapping scavenger with 5' mRNA cap analogues: structural requirements for catalytic activity"  
*J. Phys.: Condens. Matter* **2007**, *19*, 285217.
9. Wierzchowski, J.; Pietrzak, M.; Stepinski, J.; Jemielity, J.; Kalek, M.; Bojarska, E.; Jankowska-Anyszka, M; Davis, R. E.; Darzynkiewicz, E.  
"Kinetics of *C. Elegans* DcpS cap hydrolysis studied by fluorescence spectroscopy"  
*Nucleosides Nucleotides Nucleic Acids* **2007**, *26*, 1211-1215.
10. Bartoszewicz, A.; Kalek, M.; Nilsson, J.; Hiresova, R.; Stawinski, J.  
"A new reagent system for efficient silylation of alcohols – silyl chloride-N-methylimidazole-iodine"  
*Synlett* **2008**, 37-40.
11. Kalek, M.; Benedikson, P.; Vester, B.; Wengel, J.  
"Identification of efficient and sequence specific bimolecular artificial ribonucleases by a combinatorial approach"  
*Chem. Commun.* **2008**, 762-764.
12. Deshmukh, M. V.; Jones, B. N.; Quang-Dang, D.; Flinders, J. C.; Floor, S. N.; Kim, C.; Jemielity, J.; Kalek, M.; Darzynkiewicz, E.; Gross J. D.  
"mRNA decapping is promoted by an RNA binding channel in Dcp2"  
*Mol. Cell* **2008**, *29*, 324-336.
13. Bartoszewicz, A.; Kalek, M; Stawinski, J.

- "The case for the intermediacy of monomeric metaphosphates during oxidation of *H*-phosphonothioate, *H*-phosphonodithioate, and *H*-phosphonoselenoate monoesters. Mechanistic and synthetic studies."  
*J. Org. Chem.* **2008**, *73*, 5029-5038.
14. Kalek, M.; Stawinski, J.  
"Palladium-catalyzed C-P bond formation: mechanistic studies on the ligand substitution and the reductive elimination. An intramolecular catalysis by the acetate group in Pd<sup>II</sup> complexes."  
*Organometallics* **2008**, *27*, 5876-5888.
15. Bartoszewicz, A.; Kalek, M.; Stawinski, J.  
"Iodine-promoted silylation of alcohols with silyl chlorides. Synthetic and mechanistic studies."  
*Tetrahedron* **2008**, *64*, 8843-8850.
16. Kalek, M.; Ziadi, A.; Stawinski, J.  
"Microwave-assisted palladium-catalyzed cross-coupling of aryl and vinyl halides with *H*-phosphonate diesters"  
*Org. Lett.* **2008**, *10*, 4637-4640.
17. Wallin, R.; Kalek, M.; Bartoszewicz, A.; Thelin, M.; Stawinski, J.  
"On the sulfurization of *H*-phosphonate diesters and phosphite triesters using elemental sulfur"  
*Phosphorus, Sulfur Silicon Relat. Elem.* **2009**, *184*, 908-916.
18. Kalek, M.; Stawinski, J.  
"Efficient synthesis of mono- and diarylphosphinic acids: a microwave-assisted palladium-catalyzed cross-coupling of aryl halides with phosphinate"  
*Tetrahedron* **2009**, *65*, 10406-10412.
19. Kalek, M.; Jezowska, M.; Stawinski, J.  
"Preparation of arylphosphonates by Pd(0)-catalyzed cross-coupling in the presence of acetate additives. Synthetic and mechanistic studies."  
*Adv. Synth. Catal.* **2009**, *351*, 3207-3216.
20. Lavén, G.; Kalek, M.; Jezowska, M.; Stawinski, J.  
"Preparation of benzylphosphonates via a palladium(0)-catalyzed cross-coupling of *H*-phosphonate diesters with benzyl halides. Synthetic and mechanistic studies."  
*New J. Chem.* **2010**, *34*, 967-975.
21. Kalek, M.; Johansson, T.; Jezowska, M.; Stawinski, J.  
"Palladium-catalyzed propargylic substitution with phosphorus nucleophiles: efficient, stereoselective synthesis of allenylphosphonates and related compounds"  
*Org. Lett.* **2010**, *12*, 4702-4704.
22. Kalek, M.; Stawinski, J.  
"Novel, stereoselective and stereospecific synthesis of allenylphosphonates and related compounds via palladium-catalyzed propargylic substitution"  
*Adv. Synth. Catal.* **2011**, *353*, 1741-1755.

23. Söderberg, L.; Lavén, G.; Kalek, M.; Stawinski, J.  
“<sup>31</sup>P NMR and computational studies on stereochemistry of conversion of phosphoramidate diesters into the corresponding phosphotriesters”  
*Nucleosides Nucleotides Nucleic Acids* **2011**, *30*, 552-564.
24. Jiménez-Halla, J. O. C.; Kalek, M.; Stawinski, J.; Himo, F.  
“Computational study of the mechanism and selectivity of palladium-catalyzed S<sub>N</sub>2’ propargylic substitution with phosphorus nucleophiles”  
*Chem. Eur. J.* **2012**, *18*, 12424-12436.
25. Kalek, M.; Himo, F.  
“Combining Meyer-Schuster rearrangement with aldol and Mannich reactions – DFT study of the intermediate interception strategy”  
*J. Am. Chem. Soc.* **2012**, *134*, 19159-19169.
26. Huang, G.; Kalek, M.; Himo, F.  
“Mechanism and selectivity of rhodium-catalyzed 1:2 coupling of aldehydes and allenes”  
*J. Am. Chem. Soc.* **2013**, *135*, 7647-7659.
27. Biswas, S.; Dahlstrand, C.; Watile, R. A.; Kalek, M.; Himo, F.; Samec, J. S. M.  
“Atom-efficient gold(I) chloride-catalyzed synthesis of alpha-sulfenylated carbonyl compounds from propargylic alcohols and aryl thiols: substrate scope and combined experimental and computational mechanistic investigation”  
*Chem. Eur. J.* **2013**, *19*, 17939–17950.
28. Kalek, M.; Stawinski, J.  
“Stereoselective methods for carbon-phosphorus (C–P) bond formation”  
in: “Stereoselective synthesis of drugs and natural products”, Andrushko, V. and Andrushko, N. (Eds.), John Wiley & Sons, 2013 (ISBN 978-1-118-03217-6), pp. 1443-1472.
29. Huang, G.; Kalek, M.; Liao, R.-Z.; Himo, F.  
“Mechanism, reactivity, and selectivity of iridium-catalyzed C(sp<sup>3</sup>)-H borylation of chlorosilanes”  
*Chem. Sci.* **2015**, *6*, 1735-1746.
30. Lee S. Y.; Fujiwara, Y.; Nishiguchi, A.; Kalek, M.; Fu, G. C.  
“Phosphine-catalyzed enantioselective intramolecular [3+2] cycloadditions to generate fused ring systems”  
*J. Am. Chem. Soc.* **2015**, *137*, 4587-4591.
31. Kalek, M.; Fu, G. C.  
“Phosphine-catalyzed doubly stereoconvergent γ-additions of racemic heterocycles to racemic allenolates: the catalytic enantioselective synthesis of protected α,α-disubstituted α-amino acid derivatives”  
*J. Am. Chem. Soc.* **2015**, *137*, 9438-9442.
32. Santoro, S.; Kalek, M.; Huang, G.; Himo, F.  
“Elucidation of mechanisms and selectivities of metal-catalyzed reactions using quantum chemical methodology”

*Acc. Chem. Res.* **2016**, *49*, 1006-1018.

33. Kalek, M.; Fu, G. C.  
“Caution in the use of nonlinear effects as a mechanistic tool for catalytic enantioconvergent reactions: intrinsic negative nonlinear effects in the absence of higher order species”  
*J. Am. Chem. Soc.* **2017**, *139*, 4225-4229.
34. Kalek, M.; Himo, F.  
“Mechanism and selectivity of cooperatively-catalyzed Meyer-Schuster rearrangement/Tsuji-Trost allylic substitution. Evaluation of synergistic catalysis by means of combined DFT and kinetics simulations.”  
*J. Am. Chem. Soc.* **2017**, *139*, 10250-10266.
35. Qiu Y.; Mendoza, A.; Posevins D.; Himo, F.; Kalek, M.; Bäckvall, J.-E.  
“Mechanistic insight into enantioselective palladium-catalyzed oxidative carbocyclization-borylation of enallenes”  
*Chem. Eur. J.* **2018**, *24*, 2433-2439.
36. Rajkiewicz, A. A.; Kalek, M.  
“N-Heterocyclic carbene-catalyzed olefination of aldehydes with vinylodonium salts to generate  $\alpha,\beta$ -unsaturated ketones”  
*Org. Lett.* **2018**, *20*, 1906-1909 (most-accessed *Org. Lett.* article from Poland published in 2018).
37. Ghosh, M. K.; Rajkiewicz, A. A.; Kalek, M.  
“Organocatalytic group-transfer reactions with hypervalent iodine reagents”  
*Synthesis* **2019**, *51*, 359-370 (invited review).
38. Ghosh, M. K.; Rzymkowski, J.; Kalek, M.  
“Transition metal-free aryl-aryl cross-coupling: C–H arylation of 2-naphthols with diaryliodonium salts”  
*Chem. Eur. J.* **2019**, *25*, 9619-9623 (among 10% top downloaded *Chem. Eur. J.* papers 2018-2019).
39. Rajkiewicz, A. A.; Wojciechowska, N.; Kalek, M.  
“N-Heterocyclic carbene-catalyzed synthesis of ynones via C–H alkynylation of aldehydes with alkynyliodonium salts – evidence for alkynyl transfer via direct substitution at acetylenic carbon”  
*ACS Catal.* **2020**, *10*, 831-841.  
(preprint: *ChemRxiv*, 10.26434/chemrxiv.9946925.v1)
40. Perlinska, A. P.; Kalek, M.; Christian, T.; Hou, Y.-M.; Sulkowska, J. I.  
“Mg<sup>2+</sup>-dependent methyl transfer by a knotted protein: A molecular dynamics and quantum mechanics study”  
*ACS Catal.* **2020**, *10*, 8058-8068 (cover picture).
41. Kraszewski, K.; Tomczyk, I.; Drabinska, A.; Bienkowski, K.; Solarska, R.; Kalek, M.  
“Mechanism of iodine(III)-promoted oxidative dearomatizing hydroxylation of phenols: evidence for radical-chain pathway”  
*Chem. Eur. J.* **2020**, *26*, 11584-11592 (Hot Paper).  
(preprint: *ChemRxiv*, 10.26434/chemrxiv.12102771.v1)

42. Sarkar, S.; Ghosh, M. K.; Kalek, M.  
“Synthesis of Pummerer’s ketone and its analogs by iodosobenzene-promoted oxidative phenolic coupling”  
*Tetrahedron Lett.* **2020**, *61*, 152459.
43. Gołębiewska, J.; Bartoszewicz, A.; Kalek, M.; Stawinski, J.  
“Second generation of nucleotide analogues”  
*Phosphorus Sulfur Silicon Relat. Elem.* **2022**, *197*, 511-514.
44. Sarkar, S.; Wojciechowska, N.; Rajkiewicz, A. A.; Kalek, M.  
“Synthesis of aryl sulfides by metal-free arylation of thiols with diaryliodonium salts”  
*Eur. J. Org. Chem.* **2022**, e202101408.  
(preprint: *ChemRxiv*, 10.33774/chemrxiv-2021-dv1vk)
45. Pareek, A.; Kalek, M.  
“Regioselective Morita-Baylis-Hillman reaction with N-alkylpyridinium salts as electrophiles”  
*Adv. Synth. Catal.* **2022**, *364*, 2846-2851.  
(preprint: *ChemRxiv*, 10.26434/chemrxiv-2022-9r2kk)
46. Jacquet, M.; Osella, S.; Harputlu, E.; Pałys, B.; Kaczmarek, M.; Nawrocka, E. K.; Rajkiewicz, A. A.; Kalek, M.; Michałowski, P. P.; Trzaskowski, B.; Unlu, C. G.; Lisowski, W.; Pisarek, M.; Kazimierczuk, K.; Ocakoglu, K.; Więckowska, A.; Kargul, J.  
“Diazonium-based covalent molecular wiring of single-layer graphene leads to enhanced unidirectional photocurrent generation through the p-doping effect”  
*Chem. Mater.* **2022**, *34*, 3744-3758.
47. Kraszewski, K.; Tomczyk, I.; Kalek, M.  
“Intermolecular enantioselective dearomatizing *para*-methoxylation of phenols using 2-iodoresorcinol/lactamide catalysts”  
*Tetrahedron Lett.* **2022**, *108*, 154127.
48. Sarkar, S.; Kalek, M.  
“Metal-free S-arylation of phosphorothioate diesters and related compounds with diaryliodonium salts”  
*Org. Lett.* **2023**, *25*, 671-675.  
(preprint: *ChemRxiv*, 10.26434/chemrxiv-2022-v1zwx)
49. Jedrzejewski, M.; Belza, B.; Lewandowska, I.; Sadlej, M.; Perlinska, A. P.; Augustyniak, R.; Christian, T.; Hou, Y.-M.; Kalek, M.; Sulkowska, J. I.  
“Nucleolar essential protein 1 (Nep1): Elucidation of enzymatic catalysis mechanism by molecular dynamics simulation and quantum mechanics study”  
*Comput. Struct. Biotechnol. J.* **2023**, *21*, 3999-4008.  
(preprint: *bioRxiv*, 10.1101/2023.03.21.532383)
50. Sarvi Beigbaghlou, S.; Yafele, R. S.; Kalek, M.  
“Electrochemical dearomatizing spiro-lactonization and spiroetherification of naphthols and phenols”



*Synthesis* **2023**, *55*, 4173-4180.  
(preprint: *ChemRxiv*, 10.26434/chemrxiv-2023-69wcr)

51. Wojciechowska, N.; Bienkowski, K.; Solarska, R.; Kalek, M.  
“Electrochemical asymmetric diacetoxylation of styrenes mediated by chiral iodoarene catalyst”  
*Eur. J. Org. Chem.* **2023**, *26*, e202300477.  
(preprint: *ChemRxiv*, 10.26434/chemrxiv-2023-90x56)
52. Tomczyk, I.; Kalek, M.  
“Electrochemical dearomatizing methoxylation of phenols and naphthols: synthetic and computational studies”  
*Chem. Eur. J.* **2024**, *30*, e202303916.
53. Bernard, R. S.; Jha, A. K.; Kalek, M.  
“Electrochemical oxidations through hypervalent iodine redox catalysis”  
*Tetrahedron Chem* **2024**, *11*, 100081 (invited review).
54. Jha, A. K.; Sarkar, S.; Szczepanski, K.; Kalek, M.  
“Arylation of secondary phosphines with diaryliodonium salts under metal-free and non-photochemical conditions”  
*Adv. Synth. Catal.*, 10.1002/adsc.202400919.

## II. Conference proceedings

1. Kalek, M.; Jemielity, J.; Grudzien, E.; Zuberek, J.; Darzynkiewicz, Z.M.; Bojarska, E.; Stepinski, J.; Stolarski, R.; Davis, R.E.; Rhoads, R.E.; Darzynkiewicz, E.  
“Synthesis and biochemical properties of the novel, enzymatically stable mRNA cap analogues with versatile potential applications” in:  
*Collection Symposium Series* (M. Hocek, Ed.), Vol. 7, p. 355-359, Institute of Organic Chemistry and Biochemistry, Academy of Sciences of the Czech Republic, Prague 2005.
2. Kalek, M.; Stawinski, J.  
“Synthetic studies on the P-C bond formation *via* a Pd-catalyzed cross-coupling reaction. Application to the synthesis of P-arylated nucleic acids” in:  
*Collection Symposium Series* (M. Hocek, Ed.), Vol. 10, p. 214-218, Institute of Organic Chemistry and Biochemistry, Academy of Sciences of the Czech Republic, Prague 2008.
3. Bartoszewicz, A.; Kalek, M.; Stawinski, J.  
“Synthesis of nucleoside phosphorothio-, phosphorodithio- and phosphoroselenoate diesters *via* oxidative esterification of the corresponding H-phosphonate analogues” in:  
*Collection Symposium Series* (M. Hocek, Ed.), Vol. 10, p. 219-223, Institute of Organic Chemistry and Biochemistry, Academy of Sciences of the Czech Republic, Prague 2008.
4. Kalek, M.; Bartoszewicz, A.; Stawinski, J.  
“Synthesis of nucleoside phosphorothio-, phosphorodithio- and phosphoroselenoate diesters *via* oxidative esterification of the corresponding H-phosphonate analogues”,  
*Nucleic Acids Symposium Series* **2008**, *52*, 285-286.

5. Kalek, M.; Jezowska, M.; Stawinski, J.  
"Palladium-catalyzed propargylic substitution with phosphorus nucleophiles",  
*ACS Meeting, Abstracts of Papers, ORGN-487 (2010)*.

## CONFERENCE PRESENTATIONS

1. Kalek, M.; Kowalska, J.; Jemielity, J.; Darzynkiewicz, E.  
"Synthesis of nucleotides modified in the phosphate chain" (poster; in Polish)  
*46th Meeting of the Polish Chemical Society, Lublin, Poland, September 2003*.
2. Kalek, M.; Grudzien, E.; Jemielity, J.; Zuberek, J.; Bojarska, E.; Cohen, L. S.; Stepinski, J.; Stolarski, R.; Davies, R. E.; Rhoads, R. E.; Darzynkiewicz, E.  
"Synthesis of cap analogues selectively modified in triphosphate chain: tools in studies of decapping process" (poster)  
*29th FEBS Meeting, Warsaw, Poland, June 2004*.
3. Kalek, M.; Jemielity, J.; Stepinski, J.; Stolarski, R.; Darzynkiewicz, E.  
"Simple and efficient method for synthesis of nucleosides 5'-methylenebis(phosphonate)s" (poster)  
*16th International Roundtable on Nucleosides, Nucleotides and Nucleic Acids, Minneapolis, USA, September 2004*.
4. Kalek, M.; Jemielity, J.; Zuberek, J.; Grudzien, E.; Bojarska, E.; Cohen, L. S.; Stepinski, J.; Stolarski, R.; Davies, R. E.; Rhoads, R. E.; Darzynkiewicz, E.  
"Synthesis and biochemical properties of novel mRNA 5' cap analogs resistant to enzymatic hydrolysis" (poster)  
*16th International Roundtable on Nucleosides, Nucleotides and Nucleic Acids, Minneapolis, USA, September 2004*.
5. Kalek, M.; Jemielity, J.; Grudzien, E.; Zuberek, J.; Darzynkiewicz, Z.M.; Bojarska, E.; Stepinski, J.; Stolarski, R.; Davis, R. E.; Rhoads, R. E.; Darzynkiewicz, E.  
"Synthesis and biochemical properties of the novel, enzymatically stable mRNA cap analogues with versatile potential applications" (oral communication)  
*13th Symposium on Chemistry of Nucleic Acids Components, Špindlerův Mlýn, Czech Republic, September 2005*.
6. Kalek, M.; Wengel, J.  
"Preliminary studies on sequence specific artificial ribonucleases based on LNA" (poster)  
*27th International Round Table on Nucleosides, Nucleotides and Nucleic Acids, Bern, Switzerland, September 2006*.
7. Kalek, M.; Stawinski, J.  
"Efficient method for the P-C bond formation *via* palladium-catalyzed coupling and its application to the synthesis of P-arylated nucleic acids" (poster)  
*3rd Nucleic Acid Chemical Biology (NACB) Symposium, Odense, Denmark, June 2007*.
8. Kalek, M.; Stawinski, J.

- “Synthetic studies on the P-C bond formation *via* Pd-catalyzed cross-coupling reaction. Application to the synthesis of P-arylated nucleic acids” (oral communication)  
*14th Symposium on Chemistry of Nucleic Acids Components*, Český Krumlov, Czech Republic, June 2008.
9. Kalek, M.; Bartoszewicz, A.; Stawinski, J.  
“Synthesis of nucleoside phosphorothio-, phosphorodithio- and phosphoroselenoate diesters via oxidative esterification of the corresponding H-phosphonate analogues” (poster)  
*Joint Symposium of 18th International Round Table on Nucleosides, Nucleotides and Nucleic Acids and 35th International Symposium on Nucleic Acid Chemistry*, Kyoto, Japan, September 2008.
10. Kalek, M.; Ziadi, A.; Stawinski, J.  
“Microwave-assisted palladium-catalyzed cross-coupling of aryl and vinyl halides with H-phosphonate diesters” (poster)  
*4th CRC International Symposium on “Cross-Coupling and Organometallics”*, Stockholm, Sweden, November 2008.
11. Kalek, M.; Jezowska, M.; Stawinski, J.  
“Intramolecular catalysis of the ligand exchange by acetate during C-P forming cross-coupling. Mechanistic studies and synthetic application.” (poster)  
*18th EuCheMS Conference on Organometallic Chemistry*, Göteborg, Sweden, June 2009.
12. Kalek, M.; Stawinski, J.  
“Microwave-assisted, palladium-catalyzed synthesis of arylphosphinates” (poster)  
*14th International Symposium on Relations between Homogeneous and Heterogeneous Catalysis*, Stockholm, Sweden, September 2009.
13. Kalek, M.; Jezowska, M.; Stawinski, J.  
“Synthesis of allenylphosphonates by palladium-catalyzed propargylic substitution” (oral communication)  
*18th International Conference on Phosphorus Chemistry*, Wroclaw, Poland, July 2010.
14. Kalek, M.; Jezowska, M.; Stawinski, J. (oral communication)  
“Palladium-catalyzed propargylic substitution with phosphorus nucleophiles”  
*240th ACS National Meeting & Exposition*, Boston, USA, August 2010.
15. Kalek, M.; Himo, F.;  
“Numerical simulation of chemical kinetics – a tool for the analysis of complex kinetic networks. A case study of contemporaneous dual catalysis.” (oral communication)  
*23rd Organikerdagarna*, Göteborg, Sweden, June 2012.
16. Kalek, M.; Himo, F.;  
“Simulation of chemical kinetic networks – a tool for the analysis of complex catalytic cycles. Case study of cooperative catalysis.” (poster)  
*International Conference “Catalysis in Organic Synthesis”*, Moscow, Russia, September 2012.
17. Kalek, M.

“Analysis of selectivity in synergistic catalysis by means of combined DFT calculations and kinetics simulations” (invited oral communication)  
*4th Meeting on Challenges in Computational Homogeneous Catalysis*, Stockholm, Sweden, June 2017.

18. Kalek, M.  
“Intrinsic nonlinear effect in catalytic enantioconvergent reactions” (invited oral communication; in Polish)  
*60th Meeting of the Polish Chemical Society*, Wroclaw, Poland, September 2017.
19. Kalek, M.; Qiu, Y.; Mendoza, A.; Posevins, D.; Himo, F.; Bäckvall, J.-E.  
“Computational studies on mechanism and selectivity of asymmetric palladium-catalyzed oxidative carbocyclization–borylation of enallenes” (poster)  
*11th Nationwide Polish Symposium of Organic Chemistry (OSCO)*, Warsaw, Poland, April 2018.
20. Kalek, M.; Rajkiewicz, A. A.; Ghosh, M. K.; Wojciechowska, N.; Rzymkowski, J.  
“Metal-free C–H functionalizations using iodonium salts as group transfer reagents” (invited lecture)  
*EuChemS Div. of Org. Chem. Young Investigator Workshop*, Vienna, Austria, July 2019.
21. Kalek, M.  
“Metal-free C–H functionalizations using iodonium salts as group transfer reagents” (poster)  
*European Symposium on Organic Chemistry*, Virtual Mini Symposium, July 2021.
22. Kalek, M.  
“*N*-Heterocyclic carbene-catalyzed synthesis of ynones via C–H alkynylation of aldehydes with alkynyliodonium salts” (invited oral communication)  
*Modern Organic Synthesis Symposium*, Warsaw, Poland, October 2021.
23. Kalek, M.; Rajkiewicz, A. A.; Wojciechowska, N.  
“*N*-Heterocyclic carbene-catalyzed synthesis of ynones via C–H alkynylation of aldehydes with alkynyliodonium salts” (poster)  
*ACS Spring 2022 Meeting*, San Diego, USA, March 2022.
24. Kalek, M.; Jha, A. K.; Rajkiewicz, A. A.; Sarkar, S.; Wojciechowska, N.; Szczepański, K.  
“Arylation of sulfur and phosphorus nucleophiles with diaryliodonium salts” (oral communication)  
*66th Meeting of the Polish Chemical Society*, Poznan, Poland, September 2024.
25. Kalek, M.; Bernard, R. S.; Jha, A. K.; Pareek, A.; Sarvi-Beigbaghlou, S.; Yafele, R. S.; Tomczyk, I.  
“Dearomatization reactions under electrochemical and organocatalytic conditions: tools for the built-up of molecular complexity” (poster)  
*66th Meeting of the Polish Chemical Society*, Poznan, Poland, September 2024.

## OTHER TALKS

1. “Conjugates of DNA with transition metal complexes and their application in duplex stability modulation and catalysis of RNA cleavage”  
University of Warsaw, Poland 02/2007

2. "Phosphine-catalyzed enantioselective stereoconvergent reactions. Development of new processes, mechanistic investigations, and studies of non-linear effects."  
Stockholm University, Sweden 03/2017
3. "Mechanistic and synthetic investigations on catalytic reactions"  
Institute of Organic Chemistry, Polish Academy of Sciences, Poland 02/2018
4. "Analysis of selectivity in synergistic catalysis by means of combined DFT calculations and kinetics simulations"  
Warsaw University of Technology, Poland 05/2018
5. "Reactions employing hypervalent iodine compounds – new synthetic methods and mechanistic investigations"  
M. Mąkosza Foundation Scientific Award Lecture  
Institute of Organic Chemistry, Polish Academy of Sciences, Poland 11/2018
6. "Metal-free C–H functionalizations using iodonium salts as group transfer reagents"  
Institute of Bioorganic Chemistry, Polish Academy of Sciences, Poland 10/2019
7. "Promoting new bond formation through oxidation: group-transfers from hypervalent iodine reagents and dearomatizations"  
Texas Christian University, USA 04/2024