CURRICULUM VITAE

Dr. Mikhail Filatov

Lecturer
Technological University Dublin
School of Chemical and Biopharmaceutical Sciences

Contact Information
Central Quad, City Campus, Grangegorman, Dublin 7, Dublin, Ireland
Office: PH-611
Phone: +353-874582449
Email: mikhail.filatov@tudublin.ie
Personal web-site: https://mihafil.github.io/academic

• Professional Experience

10/2017–current	Lecturer in Organic Chemistry School of Chemical and Biopharmaceutical Sciences, Technological University Dublin, Ireland
09/2015 – 09/2017	Marie Curie Research Fellow (MSCA-IF) School of Chemistry, Trinity College Dublin, Ireland
04/2014 – 07/2015	Researcher in EU project POLINNOVA Institute of Polymers, Bulgarian Academy of Sciences, Sofia, Bulgaria
02/2010 – 03/2014	Postdoctoral Researcher Max Planck Institute for Polymer Research, Mainz, Germany
12/2008 – 12/2009	CNRS Postdoctoral Researcher Institute of Molecular Chemistry, University of Burgundy, Dijon, France
06/2008 – 07/2008	Visiting Researcher Department of Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, USA
08/2005 – 10/2008	Managing Director Esterkem Ltd., private chemical company, Moscow, Russia

• Education

01/2020 – 06/2020	Postgraduate Certificate in University Learning and Teaching Learning, Teaching and Technology Centre (LTTC), TU Dublin, Ireland
10/2005 – 11/2008	PhD in Organic Chemistry Department of Chemistry, Moscow State University, Moscow, Russia Thesis title: "General synthetic approach to porphyrins and dipyrrins with π-extended system". Supervisors: I.P Beletskaya and A.V. Cheprakov
09/2000 – 07/2005	Diploma of Chemist (with honours) Department of Chemistry, Moscow State University, Moscow, Russia

• Research Interests and Expertise

Organic chemistry. Multistep organic synthesis of functional dyes: π-extended porphyrins, metal dipyrrins, boron dipirromethenes (BODIPY). Synthesis and chemical modification of photoactive materials: metal-organic frameworks, sol-gels, functionalized biopolymers (chitosan, cellulose acetate).

Photochemistry. Singlet oxygen: generation, sensing and application in organic synthesis. Photoinduced electron transfer (PET) in donor-acceptor molecules. Spin-orbit charge-transfer intersystem crossing (SOCT-ISC) dyes and their application as sensitizers in photodynamic therapy, photon upconversion and photopolymerization.

• Research Funding/Awards

2022 – current	Science Foundation Ireland Frontiers for the Future Award (Principal Investigator) Project: "Dyes with Switchable Intersystem Crossing for Photonics"
2020 – 2024	TU Dublin Research Scholarship (Principal Investigator) Project: "Heavy-Atom-Free Photosensitizing Materials"
2015 – 2017	European Commission, Horizon 2020 Programme Grant (Principal Investigator) Project: "Controlled Singlet Oxygen Release Sensitizer in Photodynamic Therapy"
2010 – 2014	Max Planck Society Scholarship Project: "New Functional Dyes for NIR to Visible Light Upconversion"
2005 – 2006	Russian Foundation for Assistance to Small Innovative Enterprises (spin-off) Project: "Development of Technology of 24-Epibrassinolide Production"

• Teaching Experience

Currently taught modules

CHEM1007 – Introduction to Chemistry

CHEM2008 – Organic Chemistry

CHEM2022 – Spectroscopy

CHEM2024 – Pharmaceutical & Bioorganic Chemistry

CHEM2025 – Medicinal Chemistry & Pharmchem Processes

CHEM3011 – Organic Chemistry & Stereochemistry

CHEM4008 – Topics in Medicinal Chemistry

Previously taught modules:

CHEM1002 – Introduction to Chemistry

CHEM2009 – Principles of Drug Action

CHEM2023 – Organic Chemistry

CHEM3003 – Organic Chemistry & Stereochemistry

CHEM4004 – Advanced Organic Chemistry

• Departmental admin roles

Phys2Life Research Hub Executive Committee member

Year coordinator for DT261-2 group (2nd year BSc in Medicinal Chemistry & Pharmaceutical Sciences)

Module coordinator for CHEM3011 - Organic Chemistry & Stereochemistry

• Reviewer Activities

Journal articles reviewed (252)

Acted as a referee and adjudicative referee for 39 academic journals.

Chemical Communications (69), The Journal of Organic Chemistry (28), ChemistrySelect (25), Chemistry–A European Journal (16), Physical Chemistry Chemical Physics (16), Angewandte Chemie International Edition (14), Journal of Materials Chemistry C (11), Chemical Science (7), Journal of Physical Chemistry (7), Photochemical and Photobiological Sciences (7), Dyes and Pigments (6), ACS Materials Letters (5), Journal of the American Chemical Society (5), RSC Advances (4), New Journal of Chemistry (3), JACS Au (2), Chemistry and Biodiversity (2), European Journal of Inorganic Chemistry (2), Small (2), Nanoscale (2), Nature Communications (2), Journal of Physical Chemistry Letters (2), Accounts of Chemical Research (1), Electroanalysis (1), Chemistry–An Asian Journal (1), ChemPhotoChem (1), ChemPhysChem (1), Organic Letters (1), ACS Central Science (1), Photochemistry&Photobiology (1), Japanese Journal of Applied Physics (1), Advanced Optical Materials (1), Sustainable Food Technology (1), Applied Research (1), ACS Catalysis (1), ACS Omega (1), Asian Journal of Organic Chemistry (1), Chemical Reviews (1).

Reviewer Identifier: https://www.webofscience.com/wos/author/record/A-2266-2013

Funding applications reviewed (29)

Acted as a referee for the following funding agencies: European Commission H2020 – Marie Curie IEFs, ANR (Agence nationale de la recherché), Polish National Science Centre.

• Patents

1. Long-term stable composition, such as phosphorescent composition or TTA-photon upconversion composition, EP 2 851 407 A1, US 2016/0222286 A1, WO 2015/044129 A1, **2015**

2. Method of Synthesis of 5,5'-Disubstituted π-extended Dipyrromethenes and Their Use as Analytical Reagents for Metal Ions and Fluorescent Imaging Probes, US 2011/0144351 A1, **2009**

3. Method of Reduction of Unsaturated Ketones into Saturated Ketones, RU 2 293 720 C1, **2007**

4. Method of Synthesis of 24-Epibrassinolide, RU 2 272 044 C1, **2006**

• Publications

Summary: 40 scientific papers published (18 as a corresponding author), 1 book chapter, 4 patents.
h index = 25 (Google Scholar), > 2200 citations
https://scholar.google.bg/citations?user=g1IdjV4AAAAJ&hl=ru
Orcid ID: 0000-0002-1640-841X

Peer-review articles

(* corresponding author)

41. A. Sheehan, I.A. Okkelman, G. Groslambert, C. Bucher, R.I. Dmitriev, M.A. Filatov*, Optoelectronic Properties and Fluorescence Lifetime Imaging Application of Donor-Acceptor Dyads Derived From 2,6-DicarboxyBODIPY. *Chem. Eur. J.*, **2025**, doi: 10.1002/chem.202404188.

40. P.P. Chebotaev, A.A. Buglak, A. Sheehan, M.A. Filatov*, Predicting fluorescence to singlet oxygen generation quantum yield ratio for BODIPY dyes using QSPR and machine learning. *Phys. Chem. Chem. Phys.*, **2024**, *26*, 25131-25142.

39. K. Coldrick, C. Newman, J. Doran, G. Amarandei, M.A. Filatov*, Enhancing Hybrid Photovoltaic–Thermal System Efficiency with Boron Dipyrromethene Dyes, *ACS Appl. Opt. Mater.*, **2024**, *2*, 1985–1998.

38. A. Sheehan, T. Mikulchyk, S. Karuthedath, C. De Castro, S. Karuthedath, W. Althobaiti, M. Dvoracek, Sabad-e- Gul, H.J. Byrne, F. Laquai, I. Naydenova, M.A. Filatov*, Diethoxycarbonyl-BODIPYs as heavy-atom-free photosensitizers for holographic recording in cellulose acetate photopolymer, *J. Mater. Chem. C*, **2023**, 11, 15084-15096.

37. J. Isokuortti, T. Griebenow, J.-S. von Glasenapp, T. Raeker, M.A. Filatov, T. Laaksonen, R. Herges, N.A. Durandin, Triplet sensitization enables bidirectional isomerization of diazocine with 130 nm redshift in excitation wavelengths, *Chem. Sci.*, **2023**, *14*, 9161-9166.

36. T. Mikulchyk, S. Karuthedath, C. De Castro, A.A. Buglak, A. Sheehan, A. Wieder, F. Laquai, I. Naydenova, M.A. Filatov*, Charge Transfer Mediated Triplet Excited State Formation in Donor-Acceptor-Donor BODIPY: Application for Recording of Holographic Structures in Photopolymerizable Glass, *J. Mater. Chem. C*, **2022**, *10*, 11588-11597. **Highlighted on the back cover.**

35. G.V. Morozkov, A.S. Abel, M.A. Filatov, S.E. Nefedov, V.A. Roznyatovsky, A.V. Cheprakov, A.Yu. Mitrofanov, I.S. Ziankou, A. Averin, I.P. Beletskaya, J. Michalak, C. Bucher, L. Bonneviot, A. Bessmertnykh-Lemeune, Ruthenium(II) complexes with phosphonate-substituted 1,10-phenanthroline ligands: synthesis, characterization and use in organic photocatalysis, *Dalton Trans.*, **2022**, *51*, 13612-13630. **Highlighted on the front cover.**

34. N. Kiseleva, M.A. Filatov, J.C. Fischer, M. Kaiser, M. Jakoby, D. Busko, I.A. Howard, B.S. Richards, A. Turshatov* BODIPY–pyrene donor–acceptor sensitizers for triplet–triplet annihilation upconversion: the impact of the BODIPY-core on upconversion efficiency. *Phys. Chem. Chem. Phys.*, **2022**, *24*, 3568-3578.

33. A.A. Buglak, A. Charisiadis, A. Sheehan, C.J. Kingsbury, M.O. Senge, M.A. Filatov* Quantitative Structure–Property Relationship Modelling for the Prediction of Singlet Oxygen Generation by Heavy-atom-free BODIPY Photosensitizers. *Chem. Eur. J.*, **2021**, 27, 9934-9947.

32. J. Isokuortti, K. Kuntze, M. Virkki, Z. Ahmed, E. Vuorimaa-Laukkanen, M.A. Filatov, A. Turshatov, T. Laaksonen, A. Priimagi, N. Durandin, Expanding Azobenzene Photoswitching into Near-Infrared via Endothermic Triplet Energy Transfer. *Chem. Sci.*, **2021**, *12*, 7504-7509.

31. N. Kiseleva, D. Busko, B.S. Richards, M.A. Filatov*, A. Turshatov, Determination of Upconversion Quantum Yields Using Charge-Transfer State Fluorescence of Heavy-Atom-Free Sensitizer as a Self-Reference. *J. Phys. Chem. Lett.*, **2020**, *11*, 6560-6566.

30. A. A. Buglak, M.A. Filatov, M.A. Hussain, M. Sugimoto, Singlet Oxygen Generation by Porphyrins and Metalloporphyrins Revisited: a Quantitative Structure-Property Relationship (QSPR) Study. *J. Photochem. Photobiol. A*, **2020**, *43*, 112833.

29. M.A. Filatov* Heavy-atom-free BODIPY Photosensitizers with Intersystem Crossing Mediated by Intramolecular Photoinduced Electron Transfer. *Org. Biomol. Chem.*, **2020**, *18*, 10-27.

28. S. Callaghan, M.A. Filatov, H. Savoie, R.W. Boyle, M.O. Senge, In vitro cytotoxicity of a library of BODIPY-anthracene and -pyrene dyads for application in photodynamic therapy. *Photochem. Photobiol. Sci.*, **2019**, *18*, 495-504.

27. M.A. Filatov*, S. Karuthedath, P.M. Polestshuk, S. Callaghan, K. Flanagan, T. Wiesner, F. Laquai, M.O. Senge, BODIPY-Pyrene and Perylene Dyads as Heavy-Atom-Free Singlet Oxygen Sensitizers. *ChemPhotoChem*, **2018**, *2*, 606-615. **Top downloaded paper 2018-2019.**

26. M.A. Filatov*, S. Karuthedath, P.M. Polestshuk, S. Callaghan, K. Flanagan, M. Telitchko, T. Wiesner, F. Laquai, M.O. Senge, Control of triplet state generation in heavy atom-free BODIPY–anthracene dyads by media polarity and structural factors. *Phys. Chem. Chem. Phys.*, **2018**, *20,* 8016-8031. **PCCP 2018 Hot Articles Collection.**

25. N. Kiseleva, M.A. Filatov*, M. Oldenburg, D. Busko, M. Jakoby, I.A. Howard, B.S. Richards, M.O. Senge, S.M. Borisov, A. Turshatov, The Janus-Faced Chromophore: A Donor-Acceptor Dyad with Dual Performance in Photon Up-conversion. *Chem. Commun.*, **2018**, *54*, 1607-1610.

24. M.A. Filatov*, S. Karuthedath, P.M. Polestshuk, H.Savoie, K.J. Flanagan, C. Sy, E. Sitte, M. Telitchko, F. Laquai, R.W. Boyle, M.O. Senge, Generation of Triplet Excited States via Photoinduced Electron Transfer in *meso*-anthra-BODIPY: Fluorogenic Response toward Singlet Oxygen in Solution and *in Vitro*. *J. Am. Chem. Soc.*, **2017**, *139*, 6282−6285.

23. S. Callaghan, M.A. Filatov*, E. Sitte, H. Savoie, R.W. Boyle, K.J. Flanagan, and M.O. Senge, Delayed release singlet oxygen sensitizers based on pyridone-appended porphyrins. *Photochem. Photobiol. Sci.*, **2017**, *16*, 1371-1374. **Highlighted on the front cover.**

22. M.A. Filatov*, M.O. Senge, Molecular devices based on reversible singlet oxygen binding in optical and photomedical applications. *Mol. Syst. Des. Eng.*, **2016**, *1*, 258-272. **Highlighted on the front cover.**

21. M.A. Filatov*, S. Baluschev, K. Landfester, Protection of Densely Populated Excited Triplet State Ensembles Against Deactivation by Molecular Oxygen. *Chem. Soc. Rev.*, **2016**, *45*, 4668-4689. **Highlighted on the front cover.**

20. T.G.B. de Souza, M.G. Vivas, C.R. Mendonça, S. Plunkett, M.A. Filatov, M.O. Senge, L. De Boni, Studying the intersystem crossing rate and triplet quantum yield of meso-substituted porphyrins by means of pulse train fluorescence technique. *J. Porphyrins Phthalocyanines*, **2016**, *20*, 1–10.

19. M.A. Filatov*, F. Etzold, D. Gehrig, F. Laquai, D. Busko, K. Landfester, S. Baluschev, Interplay between singlet and triplet excited states in a conformationally locked donor–acceptor dyad. *Dalton Trans.*, **2015**, *44*, 19207-19217.

18. M.A. Filatov*, E. Heinrich, K. Landfester, S. Baluschev, meso-Tetraphenylporphyrin with a pi-system extended by fusion with anthraquinone. *Org. Biomol. Chem.*, **2015**, *13*, 6977-6983.

17. M.A. Filatov*, E. Heinrich, D. Busko, I.Z. Ilieva, K. Landfester, S. Baluschev, Reversible Oxygen Addition on a Triplet Sensitizer Molecule: Protection from Excited States Depopulation. *Phys. Chem. Chem. Phys.*, **2015**, *17*, 6501-6510.

16. M.A. Filatov, S. Ritz, I. Ilieva, V. Mailander, K. Landfester, S. Baluschev, Extending the infrared limit of oxygenic photosynthesis. *SPIE Newsroom*, **2014**, doi: 10.1117/2.1201403.005378.

15. C. Wohnhaas, V. Mailänder, M. Dröge, M.A. Filatov, D. Busko, Y. Avlasevich, Stanislav Baluschev, T. Miteva, K. Landfester, A. Turshatov, Fabrication of low-power upconverting nanocapsules for bioimaging in red and far-red spectral regions. *Macromolecular Bioscience*, **2013**, *13*, 1422−1430.

14. M.A. Filatov*, S. Baluschev, I.Z. Ilieva, V. Enkelmann, T. Miteva, K. Landfester, S. Aleshchenkov, A.V. Cheprakov, Tetraanthraporphyrins: synthesis, structure and optical properties. *J. Org. Chem.*, **2012**, *77*, 11119−11131.

13. P.D. Harvey, A. Langlois, M.A. Filatov, D. Fortin, K. Ohkubo, S. Fukuzumi, R. Guilard, Decoupling the Artificial Special Pair to Slow Down the Rate of Singlet Energy Transfer. *J. Porphyrins Phthalocyanines*, **2012**, *16*, 8-10.

12. E.R. Ranyuk, M.A. Filatov, A.D. Averin, A.V. Cheprakov, I.P. Beletskaya, The Synthesis of Highly Basic π-Extended Porphyrins by Palladium Catalyzed Amination. *Synthesis*, **2012**, *3*, 393-398.

11. S. Thyagarajan, B. Ghosh, M.A. Filatov, A.V. Moore, A.V. Cheprakov, S.A. Vinogradov, Near infrared dipyrrin-based fluorogenic chelators for metal ions. *Proc. SPIE*, **2011**, 7910, 79100Z.

10. P.D. Harvey, M.A. Filatov, R. Guilard, Bis- and Trisporphyrin Bio-Inspired Models for Bacterial Antennas and Photosystems. *J. Porphyrins Phthalocyanines*, **2011**, *15*, 1-22.

9. M.A. Filatov, A.V. Cheprakov, The Synthesis of New Tetrabenzo- and Tetranaphthoporphyrins via the Addition Rreactions of 4,7-Dihydroisoindole. *Tetrahedron*, **2011**, 3559-3566.

8. M.A. Filatov, F. Laquai, D. Fortin, R. Guilard, P.D. Harvey, Strong Donor–Acceptor Couplings in a Special Pair-Antenna Model. *Chem. Comm.*, **2010**, *46*, 9176-9178.

7. M.A. Filatov, A. Y. Lebedev, S.N. Mukhin, S. A. Vinogradov and A. V. Cheprakov, π-Extended Dipyrrins Capable of Highly Fluorogenic Complexation with Metal Ions. *J. Am. Chem. Soc.*, **2010**, *132*, 9552-9554.

6. M.A. Filatov, R. Guilard, P.Harvey, Selective Stepwise Suzuki Cross-coupling Reaction for the Modelling of Photosynthetic Donor−Acceptor Systems. *Org. Lett.*, **2010**, *12*, 196-199.

5. A.V. Cheprakov, M.A. Filatov, The Dihydroisoindole Approach to π-Extended Porphyrins. *J. Porphyrins and Phthalocyanines*, **2009**, *13*, 291-303.

4. A.Y. Lebedev, M.A. Filatov, A.V. Cheprakov, S.A. Vinogradov, Effects of Structural Deformations on Optical Properties of Tetrabenzoporphyrins: Free-bases and Pd Complexes. *J. Phys. Chem. A.*, **2008**, *112*, 7723-7733.

3. M.A. Filatov, A.Y. Lebedev, S.A. Vinogradov, A.V. Cheprakov, Synthesis of 5,15-Diaryltetrabenzoporphyrins. *J. Org. Chem.*, **2008**, *73*, 4175-4185.

2. M.A. Filatov, A.V. Cheprakov, I.P. Beletskaya, A Facile and Reliable Method for the Synthesis of Tetrabenzoporphyrins from 4,7-Dihydroisoindole. *Eur. J. Org. Chem.*, **2007**, 3468-3475.

1. O.S. Finikova, A.V. Cheprakov, S.Y. Chernov, M.A. Filatov, S.A. Vinogradov, I.P. Beletskaya. Novel Synthesis of Substituted Tetraaryltetrabenzoporphyrins. *Doklady Chemistry*, **2003**, *391*, 222-224.

Book chapters

M.A. Filatov, Protection of triplet excited state materials from oxygen quenching and photooxidation in optical sensing applications *in Applications of Quenched Phosphorescence Detection of Molecular Oxygen in Life Sciences*, ed. D. B. Papkovsky and R. I. Dmitriev, Royal Society of Chemistry, Cambridge, **2018**, pp. 91-116, ISBN: 978-1-78801-175-4.