CURRICULUM VITAE

Dr Mikhail A. Filatov
School of Chemical and Pharmaceutical Sciences,
Central Quad, City Campus, Grangegorman,
Dublin 7, Dublin, Ireland

mikhail.filatov@tudublin.ie
https://mihafil.github.io/academic
Office: PH-611
Phone: +353-40-24-646

• Professional Experience

10/2017–current	Lecturer in Organic Chemistry School of Chemical and Pharmaceutical Sciences, Technological University Dublin, Ireland
09/2015 – 09/2017	Marie Curie Research Fellow (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 Fellow Max Planck Institute for Polymer Research, Mainz, Germany
12/2008 – 12/2009	CNRS Postdoctoral Fellow Institute of Molecular Chemistry, University of Burgundy, Dijon, France
06/2008 – 07/2008	Visiting Scientist 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: Prof. Irina Beletskaya, Dr. Andrei Cheprakov
09/2000 – 07/2005	Diploma of Chemist (with honours) Department of Chemistry, Moscow State University, Moscow, Russia

• Research Interests

Multistep organic synthesis of functional dyes: π-extended porphyrins, dipyrrins, BODIPYs. Synthesis of materials: modified biopolymers, graphene oxide, MOFs. Singlet oxygen generation, sensing and reactivity. Photoinduced electron transfer in donor-acceptor dyads. Intersystem crossing in heavy-atom-free dyes. Photodynamic therapy. Triplet-triplet annihilation photon upconversion. Photocatalysis.

• Funding and Support

2022 – 2026	SFI 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"

2007 – 2008 Scholarship of the President of Russian Federation for outstanding PhD students

2005 – 2006 Russian Foundation for Assistance to Small Innovative Enterprises (spin-off)
Project: "Development of Technology of 24-Epibrassinolide Production"

• Teaching Experience

Current teaching responsibilities:

CHEM1007 – Introduction to Chemistry (24 lectures), CHEM2008 – Organic Chemistry (12 lectures), CHEM2022 – Spectroscopy (12 lectures), CHEM2024 - Pharmaceutical & Bioorganic Chemistry (12 lectures), CHEM2025 - Medicinal Chemistry & Pharmchem Processes (12 lectures), CHEM3011 - Organic Chemistry & Stereochemistry (12 lectures), CHEM4008 - Topics in Medicinal Chemistry (6 lectures)

Previously taught modules:

CHEM2009 - Principles of Drug Action (6 lectures), CHEM2023 - Organic Chemistry (12 lectures), CHEM3003 - Organic Chemistry & Stereochemistry (12 lectures), CHEM4004 - Advanced Organic Chemistry (12 lectures)

Departmental admin roles:

year coordinator of DT261-2 group (BSc in Medicinal Chemistry and Pharmaceutical Sciences)

module coordinator for CHEM3011 - Organic Chemistry & Stereochemistry

• Reviewer Activities

Journal articles (214):

Acted as a referee and adjudicative referee for 28 academic journals.

Chemical Communications (67), The Journal of Organic Chemistry (27), ChemistrySelect (25), Angewandte Chemie International Edition (14), Physical Chemistry Chemical Physics (12), Journal of Materials Chemistry C (8), Chemistry – A European Journal (11), Photochemical and Photobiological Sciences (6), Dyes and Pigments (6), Journal of Physical Chemistry (6), Journal of the American Chemical Society (4), Chemical Science (3), ACS Materials Letters (3), New Journal of Chemistry (3), RSC Advances (3), JACS Au (2), Chemistry and Biodiversity (2), European Journal of Inorganic Chemistry (2), , Small (2), Accounts of Chemical Research (1), Electroanalysis (1), Chemistry–An Asian Journal (1), Journal of Physical Chemistry Letters (1), ChemPhotoChem (1), ChemPhysChem (1), Organic Letters (1), ACS Central Science (1), Photochemistry&Photobiology (1).
Reviewer Identifier: https://www.webofscience.com/wos/author/record/A-2266-2013

Funding applications (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.

• Memberships in Professional Societies

American Chemical Society, Marie Curie Fellows Association, Marie Curie Alumni Association (Irish chapter)

• Publications

Summary: 36 scientific papers published (14 as a corresponding author), 1 book chapter, 4 patents.
h index = 21 (Google Scholar), > 1700 citations
https://scholar.google.bg/citations?user=g1IdjV4AAAAJ&hl=ru
Orcid ID: orcid.org/0000-0002-1640-841X

Peer-review articles

(* corresponding author)

1. T. Mikulchyk, S. Karuthedath, C. De Castro, A.A. Buglak, A. Sheehan, A. Wieder, F. Laquai, I. Naydenova, M.A. Filatov*, *J. Mater. Chem. C*, **2022**, *10*, 11588-11597.

2. 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, *Dalton Trans.*, **2022**, *51*, 13612-13630.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

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

9. 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.

10. 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.

11. 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.

12. 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.

13. 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.

14. 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.

15. 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.

16. 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.

17. 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.

18. 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.

19. 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.

20. 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.

21. 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.

22. 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.

23. 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.

24. 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.

25. 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.

26. 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.

27. 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.

28. 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.

29. 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.

30. 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.

31. 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.

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

33. 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.

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

35. 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.

36. 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.

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**

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.