

## 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](mailto: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 dipyrins with  $\pi$ -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 ( $\pi$ -extended porphyrins, dipyrins, BODIPYs). Synthesis of materials (polymeric nanoparticles, biopolymers, graphene oxide, MOFs). Singlet oxygen (generation, sensing, reactivity). Photoinduced electron transfer. Intersystem crossing in heavy-atom-free molecules. Photodynamic therapy. Triplet-triplet annihilation photon upconversion. Photocatalysis.

### • Funding and Support

- 2020 – current     TU Dublin Research Scholarship Programme  
Project: “Heavy-Atom-Free Photosensitizing Materials”
- 2015 – 2017     European Commission, Horizon 2020 program  
Project: “Controlled Singlet Oxygen Release Sensitizer in Photodynamic Therapy”
- 2015 – 2014     Max Planck Society Scholarship
- 2007 – 2008     Scholarship of the President of Russian Federation for outstanding PhD students
- 2005     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)

## • Reviewer Activities

### Journal articles (185):

*Chemical Communications* (62), *ChemistrySelect* (25), *The Journal of Organic Chemistry* (23), *Angewandte Chemie International Edition* (13), *Physical Chemistry Chemical Physics* (9), *Journal of Materials Chemistry C* (8), *Chemistry–A European Journal* (7), *Journal of Physical Chemistry* (6), *Photochemical and Photobiological Sciences* (5), *Journal of the American Chemical Society* (4), *Dyes and Pigments* (4), *New Journal of Chemistry* (3), *RSC Advances* (3), *JACS Au* (2), *Chemistry and Biodiversity* (2), *European Journal of Inorganic Chemistry* (2), *Electroanalysis* (1), *Chemistry–An Asian Journal* (1), *Journal of Physical Chemistry Letters* (1), *ChemPhotoChem* (1), *ChemPhysChem* (1), *Chemical Science* (1), *Organic Letters* (1).

Reviewer Identifier: <https://publons.com/researcher/1546745/mikhail-filatov/peer-review/>

### Funding applications (29):

European Commission H2020 – Marie Curie IEFs, ANR (Agence nationale de la recherche), Polish National Science Centre

## • Memberships in Professional Societies

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

## • Publications

Summary: 35 scientific papers published (14 as a corresponding author), 1 book chapter, 4 patents.

*h* index = 21 (Google Scholar), > 1000 citations

<https://scholar.google.bg/citations?user=g1IdjV4AAAAJ&hl=ru>

Orcid ID: [orcid.org/0000-0002-1640-841X](https://orcid.org/0000-0002-1640-841X)

### Peer-review articles

(\* corresponding author)

1. 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. Bonnevot, A. Bessmertnykh-Lemeune, *Dalton Trans.*, **2022**, Accepted Manuscript, doi: 10.1039/D2DT01364A.

2. 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.

3. 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.

4. 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.
5. 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.
6. 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.
7. M.A. Filatov\* Heavy-atom-free BODIPY Photosensitizers with Intersystem Crossing Mediated by Intramolecular Photoinduced Electron Transfer. *Org. Biomol. Chem.*, **2020**, *18*, 10-27.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. M.A. Filatov\*, S. Balushev, K. Landfester, Protection of Densely Populated Excited Triplet State Ensembles Against Deactivation by Molecular Oxygen. *Chem. Soc. Rev.*, **2016**, *45*, 4668-4689.
16. 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.
17. M.A. Filatov\*, F. Etzold, D. Gehrig, F. Laquai, D. Busko, K. Landfester, S. Balushev, 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. Balushev, *meso*-Tetraphenylporphyrin with a pi-system extended by fusion with anthraquinone. *Org. Biomol. Chem.*, **2015**, *13*, 6977-6983.
19. M.A. Filatov\*, E. Heinrich, D. Busko, I.Z. Ilieva, K. Landfester, S. Balushev, Reversible Oxygen Addition on a Triplet Sensitizer Molecule: Protection from Excited States Depopulation. *Phys. Chem. Chem. Phys.*, **2015**, *17*, 6501-6510.
20. M.A. Filatov, S. Ritz, I. Ilieva, V. Mailander, K. Landfester, S. Balushev, Extending the infrared limit of oxygenic photosynthesis. *SPIE Newsroom*, **2014**, doi: 10.1117/2.1201403.005378.

21. C. Wohnhaas, V. Mailänder, M. Dröge, M.A. Filatov, D. Busko, Y. Avlasevich, Stanislav Balushev, 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.
22. M.A. Filatov\*, S. Balushev, 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.
23. P.D. Harvey, A. Langlois, M.A. Filatov, D. Fortin, K. Ohkubo, S. Fukuzumi, R. Guillard, Decoupling the Artificial Special Pair to Slow Down the Rate of Singlet Energy Transfer. *J. Porphyrins Phthalocyanines*, **2012**, 16, 8-10.
24. E.R. Ranyuk, M.A. Filatov, A.D. Averin, A.V. Cheprakov, I.P. Beletskaya, The Synthesis of Highly Basic  $\pi$ -Extended Porphyrins by Palladium Catalyzed Amination. *Synthesis*, **2012**, 3, 393-398.
25. S. Thyagarajan, B. Ghosh, M.A. Filatov, A.V. Moore, A.V. Cheprakov, S.A. Vinogradov, Near infrared dipyrroin-based fluorogenic chelators for metal ions. *Proc. SPIE*, **2011**, 7910, 79100Z.
26. P.D. Harvey, M.A. Filatov, R. Guillard, Bis- and Trisporphyrin Bio-Inspired Models for Bacterial Antennas and Photosystems. *J. Porphyrins Phthalocyanines*, **2011**, 15, 1-22.
27. M.A. Filatov, A.V. Cheprakov, The Synthesis of New Tetrabenzo- and Tetranaphthoporphyrins via the Addition Reactions of 4,7-Dihydroisindole. *Tetrahedron*, **2011**, 3559-3566.
28. M.A. Filatov, F. Laquai, D. Fortin, R. Guillard, P.D. Harvey, Strong Donor–Acceptor Couplings in a Special Pair-Antenna Model. *Chem. Comm.*, **2010**, 46, 9176-9178.
29. M.A. Filatov, A. Y. Lebedev, S.N. Mukhin, S. A. Vinogradov and A. V. Cheprakov,  $\pi$ -Extended Dipyrroins Capable of Highly Fluorogenic Complexation with Metal Ions. *J. Am. Chem. Soc.*, **2010**, 132, 9552-9554.
30. M.A. Filatov, R. Guillard, P. Harvey, Selective Stepwise Suzuki Cross-coupling Reaction for the Modelling of Photosynthetic Donor–Acceptor Systems. *Org. Lett.*, **2010**, 12, 196-199.
31. A.V. Cheprakov, M.A. Filatov, The Dihydroisindole Approach to  $\pi$ -Extended Porphyrins. *J. Porphyrins and Phthalocyanines*, **2009**, 13, 291-303.
32. 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.
33. M.A. Filatov, A.Y. Lebedev, S.A. Vinogradov, A.V. Cheprakov, Synthesis of 5,15-Diaryltetrabenzoporphyrins. *J. Org. Chem.*, **2008**, 73, 4175-4185.
34. M.A. Filatov, A.V. Cheprakov, I.P. Beletskaya, A Facile and Reliable Method for the Synthesis of Tetrabenzoporphyrins from 4,7-Dihydroisindole. *Eur. J. Org. Chem.*, **2007**, 3468-3475.
35. 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  $\pi$ -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.

## • Talks and Seminars

06/2021	"Photosensitizers with Charge Transfer-Mediated Intersystem Crossing: Design and Applications » ENS de Lyon, Lyon, France	Research seminar
05/2021	"Modulating Charge Transfer and Intersystem Crossing in BODIPY Sensitizers for PDT and Photon Upconversion" 1st HighLIGHTing Science Conference	Invited talk
12/2018	"Heavy atom-free donor-acceptor dyads with efficient and tunable intersystem crossing" 10th Asian Photochemistry Conference, Taipei, Taiwan	Invited talk
07/2018	"Janus-faced chromophores: Dual performance of BODIPY in triplet-triplet annihilation photon upconversion" 27th PhotoIUPAC, Dublin, Ireland	Oral presentation
11/2017	"Molecular oxygen shuttles for applications in energy conversion and biomedicine" 2 <sup>nd</sup> Silk Road International Symposium for Young Distinguished Scholars, Xian, China	Invited talk
07/2017	"Heavy atom-free BODIPY donor-acceptor dyads as singlet oxygen sensitizers" 28th International Conference on Photochemistry, Strasbourg, France	Oral presentation
04/2017	"Interplay Between Singlet and Triplet Energy States of Organic Molecules and Oxygen: Applications in Energy Conversion and Biomedicine" ICMUB, University of Burgundy, Dijon, France	Research seminar
12/2016	"Protection of Triplet Excited State Materials Against Quenching by Oxygen" 9th Asian and Oceanian Conference on Photochemistry, Singapore	Oral presentation
09/2016	"Deactivation of Photon Upconversion Systems by Oxygen: Protection strategy" EMN Meeting on Photonics, Barcelona, Spain	Invited Talk
04/2016	"Controlled Singlet Oxygen Release Photosensitizers in Photodynamic Therapy" TBSI Postdoctoral Research Day, TCD, Dublin, Ireland	Oral presentation
01/2016	"New Molecular Devices for the Control of Singlet Oxygen Generation in Photonic and Biomedical Applications" Central European Conference on Photochemistry CECP, Bad Hofgastein, Austria	Oral presentation
11/2016	"Delayed Singlet Oxygen Release Materials for Photodynamic Therapy" TBSI Knowledge Exchange Seminar, TCD, Dublin, Ireland	Research seminar
07/2015	"Triplet-Triplet Annihilation Photon Upconversion: Extending the Infrared Limit of Oxygenic Photosynthesis" 27th International Conference on Photochemistry, Jeju, South Korea	Oral presentation
07/2015	"Polymeric Singlet Oxygen Generating Scaffolds" 27th International Conference on Photochemistry, Jeju, South Korea	Oral presentation