CURRICULUM VITAE

Dr. Mikhail A. Filatov

School of Chemical and Pharmaceutical Science
Technological University Dublin
City Campus, Kevin Street, Dublin, Ireland
Tel: +353-40-24-646
e-mail: mikhail.filatov@dit.ie

Scientific Career and Education

2017- Assistant Lecturer in Chemical & Pharmaceutical Sciences, Technological University Dublin, Dublin, Ireland

2015-17 Marie Curie Research Fellow (Individual fellowship), School of Chemistry, Trinity College Dublin, Dublin, Ireland

2014-15 Visiting Scientist, Institute of Polymers, Bulgarian Academy of Sciences, Sofia, Bulgaria

2010-14 Postdoctoral Fellow, Max Planck Institute for Polymer Research, Mainz, Germany

2009 CNRS Postdoctoral Fellow, Institute of Molecular Chemistry, University of Burgundy, Dijon, France

2008 Visiting Scientisit, Department of Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, USA

2005-08 PhD in Organic Chemistry, Moscow State University, Moscow, Russia. Thesis title: "General synthetic approach to porphyrins and dipyrrins with π-extended system". Supervisors: Prof. Irina Beletskaya, Prof. Andrei Cheprakov

2005 MSc in Chemistry, Moscow State University, Moscow, Russia

Funding and Support

2015- Grant from the European Commission, Horizon 2020 program, CONSORT - "Controlled Singlet Oxygen Release Sensitizer in Photodynamic Therapy", 187866 €

2010-14 Max Planck Society Scholarship

2007-08 Scholarship of the President of Russian Federation for outstanding PhD students

2005 Grant from the Russian Foundation for Assistance to Small Innovative Enterprises for the project "Development of Technology of 24-Epibrassinolide Production", 30000 $

Technical and Professional Skills

- Teaching organic chemistry and spectroscopy courses for undergraduates. Preparing examination works, carrying out assessment. Providing an academic and consultative support to students in their learning activities. Providing academic input on existing and new courses and course development.
- Supervision of graduate and undergraduate students: organizing investigative research projects and mentoring in various aspects of chemistry.
- Research projects management including acquisition of external funding and dissemination of progress and results.
- Organization of collaborative research consortiums and authoring research proposals.
- Patenting and spinning-out commercial opportunities.

- Multistep organic synthesis (tetrapyrroles, NIR-absorbing dyes, steroids, donor-acceptor dyads.
- Synthesis of characterization of materials (polymeric nanoparticles, biopolymers, graphene oxide).
- Photophysics and photochemistry methods (fluorescence and phosphorescence spectroscopy, photon upconversion, transient absorption spectroscopy, singlet oxygen sensing).

Teaching Experience

Lecturer in the following modules:
CHEM1007 – Introduction to Chemistry (24 lectures on organic chemistry for 1st year students)
CHEM2023 – Organic Chemistry (12 lectures on organic chemistry for 2nd year students
CHEM2024 – Pharmaceutical and Bioorganic Chemistry (12 lectures on chemistry of biomolecules for 2nd year students)
CHEM2025 – Medicinal Chemistry and Chem Pharmaceutical Processes (12 lectures on drugs discovery for 2nd year students)
CHEM2022 – NMR Spectroscopy (6 lectures on application of NMR in organic chemistry for 2nd year students)
CHEM3003 – Carbonyl Chemistry and Stereochemistry (12 lectures on organic chemistry for 3rd year students)
CHEM4004 – Advanced Organic Chemistry (12 lectures on organic chemistry for 4th year students)
CHEM4008 – Topics in Medicinal Chemistry (6 lectures on photodynamic therapy of cancer for 4th year students)

Technological and Scientific Innovations

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**

Spin-off

I am a co-founder of ESTERMKEM LTD (Moscow), a spin-off company supported by a Russian governmental innovation promotion program. The company produces the natural phytohormone 24-epibrassinolide, being applied as agrochemical formulation "EPIN-EXTRA" – popular anti-stress plant growth regulator (>4 million doses annual sales in 2015). My responsibilities during establishing the company included financial administration, supervision of technical assistants, relations with governmental funding agency and private investors (2005-2008).

Scientific Journals Reviewer

The Journal of Organic Chemistry, Chemical Communications, Chemistry–A European Journal, Chemistry–An Asian Journal, New Journal of Chemistry, ChemistrySelect, Electroanalysis, Chemistry and Biodiversity, Physical Chemistry Chemical Physics, Journal of Physical Chemistry, Dyes and Pigments, Photochemical and Photobiological Sciences, RSC Advances

Identifier: publons.com/a/1546745/

Memberships in Professional Societies

American Chemical Society
Society of Porphyrins and Phthalocyanines
Marie Curie Fellows Association
Marie Curie Alumni Association (Irish chapter)

List of publications

Summary: 29 scientific papers published (including 10 as a corresponding author), 1 book chapter, 4 patents.
Average impact factor: 5
h index = 15 (Google Scholar)
> 700 citations
Orcid ID: orcid.org/0000-0002-1640-841X
https://scholar.google.bg/citations?user=g1IdjV4AAAAJ&hl=ru

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.

Full list of published peer review papers

* - corresponding author

1. **M.A. Filatov**,* Heavy-atom-free BODIPY Photosensitizers with Intersystem Crossing Mediated by Intramolecular Photoinduced Electron Transfer. *Org. Biomol. Chem.*, **2019**, doi: 10.1039/C9OB02170A

2. 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.

3. **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.

4. 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.

5. 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.

6. **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.

7. 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.**

8. **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. Top 10 most read articles.**

9. **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.**

10. 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.

11. **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.

12. **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.

13. **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.

14. **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.

16. **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.

17. 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.

18. 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.

19. 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.

20. 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.

21. **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.

22. **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.

23. **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.

24. **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.

25. **M.A. Filatov**, S.E. Aleshchenkov, A.V. Cheprakov. A Versatile General Approach to the Synthesis of Linearly Annelated π-Extended Porphyrins via 4,7-Dihydroisoindole Derivatives. *Macroheterocycles*, **2009**, *2*, 198-205.

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

27. 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.

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

29. **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.

30. 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.