

26th Winter Fluorine Conference

Clearwater Beach, FL

January 8 – 13, 2023

David Vivic and Thomas Mathew, Program Chairs

TECHNICAL PROGRAM

Program Subject to Change

Technical Program

FLUO

Division of Fluorine Chemistry

David Vivic and Thomas Mathew
Program Chairs

SUNDAY EVENING

Fluorine Chemistry Welcome Reception

5:00 – 7:00

Hyatt Regency Clearwater, Belleair Room

Fluorine Chemistry Poster Session I

Hyatt Regency Clearwater, Belleair Room

Co-sponsored by FLUO

D.A. Vivic, Organizer

T. Mathew, Organizer, Presiding

7:00 – 9:00

1. Creation of an electronic ¹⁹F NMR database. **D.A. Vivic**, L. Yorks
2. Indium mediated synthesis of homoallylic halodifluorohydrin by allylation of α -halodifluorones. **X. Lian**
3. Fluorinated trityl salts of HCB₁₁Cl₁₁ for improved reactivity. **D. Leong**, O. Gunther, O. Ozerov
4. Copper catalyzed difluoromethylation of alkyl iodides: aryl radical activation. **W. Yan**, A. Cai, C. Wang, W. Liu
5. Synthesis, conformation, and lipophilicity of multivincinal-fluorine-containing hexitol analogues. **O. Lessard**, D. Giguere

6. Synthesis of thiophene-containing perfluoroalkylated polymers for energy storage applications. **B. Ishola**, M. Ferrie, Y. Feng, H. Sun
7. Deoxyfluorination of secondary alcohols using electron deficient fluoroaromatics, KF, and organic base. **O. Osemwenkhae**, H. Sun
8. ^{19}F -qNMR as universal screening tool: Methodology, guideline and application to reaction optimization. **G. Heinrich**, M. Kondratiuk, L.J. Goossen, M. Wiesenfeldt
9. Synthesis and studies of fluorinated tetracenes. **C. Kalff**, U. Koert
10. Difluoroacetylation of organometallic reagents using difluoroacetic acid. **M. Haynes**, S.B. Munoz
11. Synthesis of (2-fluoroallyl)boronates from gem-difluoropropenes. **F. Remy**, J. Paquin, L. Chabaud
12. Base-stabilized MoOF_3^+ and WOF_3^+ cations. **C.W. Sommer**, D. Leenstra, S.D. Wetmore, M. Gerken
13. Gold-catalyzed hydrofluorination of alkynes using hydrofluoric acid. **R. Gauthier**, M. Mamone, N.V. Tzouras, M. Saab, K. Van Hecke, S.P. Nolan, J. Paquin
14. Lewis Acidity of RuF_5 and the $[\text{Ru}_2\text{F}_{11}]^-$ Anion. **B. Koch**, F. Kraus
15. Synthesis of pentafluorosulfanylated organic compounds by Kolbe-type decarboxylative electrochemical cross-coupling. **V. Mastalerz**, K.G. Lam, J. Paquin
16. Fluoride-ion donor properties of AsF_5 and SbF_5 . **F. O'Donnell**, D. Turnbull, S.D. Wetmore, M. Gerken
17. Synthesis and reactivity of novel hypervalent trifluoromethyl organobismuth complexes in catalytic olefin difluorocarbene. **T. Louis-Goff**, J. Hyvl
18. Reactivity studies of zwitterionic difluorocarbene sources. **E.O. Lilienthal**, J. Hamel
19. Multinuclear fluoridobromate(V) anions $\text{Br}_3\text{F}_{16}^-$ and $\text{Br}_3\text{F}_{17}^{2-}$ and the steric activity of the lone pair in fluoride-bridged BrF_5 complexes. **M. Moebis**, T. Graubner, A.J. Karttunen, F. Kraus
20. Enabling C-F activation through addition of photogenerated α -aminoalkyl radicals to allylic difluorides. **T. Semeniuk**, T. Dudas, J. Hamel
21. Chiral centers containing C-F and C- CF_3 bonds via copper-mediated allylic substitution. **Y. Zhang**, U. Koert
22. Frustrated magnetism of mixed metal fluoride pyrochlores $\text{AM}^{\text{II}}\text{M}^{\text{III}}\text{F}_6$. **L.L. Weragoda Masachchi**
23. Synthesis and characterization of mixed-metal fluorides. **N. Keerthisinghe**, H. zur Loye
24. Synthesis of tertiary alkyl fluorides by hydrofluorination of alkenes and deoxyfluorination of alcohols. **X. Bertrand**, J. Paquin, L. Chabaud

MONDAY MORNING

Fluorine Chemistry Session I

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

Financially supported by Chemours

T. Mathew, *Organizer*

D. A. Vicic, *Organizer, Presiding*

7:45 Welcoming Remarks.

8:00 25. (PL) Ruthenium-catalyzed olefin metathesis using fluoroalkenes and alkenyl ethers. **M. Akiyama**

8:30 26. (IL) Preparing (Multi)Fluoroarenes as Building Blocks for Synthesis: Nickel-Catalyzed Borylation of Polyfluoroarenes via C-F Bond Cleavage. **U. Radius**

8:50 27. (IL) Mild strategies in the direct generation of carbocation intermediates from C(sp³)-H bonds. **P. Musacchio**

9:10 28. (IL) Gold-catalyzed reaction of alkynes bearing a fluorinated substituent at the propargylic position. **J. Paquin**

9:30 29. (CL) Synthesis and characterization of perfluorocubane as an electron acceptor. **M. Sugiyama**, M. Akiyama, Y. Yonezawa, M. Higashi, K. Komaguchi, K. Nozaki, T. Okazoe

9:50 Intermission.

Fluorine Chemistry Session II

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

Financially supported by Chemours

T. Mathew, D. A. Vicic, *Organizers*

D. Cahard, *Presiding*

10:10 30. (PL) Late stage fluorination with metal alkali fluoride. **V. Gouverneur**

10:40 31. (CL) Defluorination of fluorinated gases and fluoropolymers with main group nucleophiles. **D. Sheldon**, M.R. Crimmin

11:00 32. (IL) Generation and applications of (aryl)difluoromethyl anion species. **H. Amii**

11:20 33. (IL) Fluorination with greenhouse gases. **A. Tlili**

11:40 34. (IL) Fluoride metathesis and HF shuttle catalysis. **M.R. Crimmin**

12:00 Lunch.

MONDAY AFTERNOON

Fluorine Chemistry Session III

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

Financially supported by Oakwood Chemical

T. Mathew, D. A. Vicic, *Organizers*

V. A. Petrov, *Presiding*

1:30 35. (IL) Pentafluoroethyl(cyano)phosphate anions: Versatile building blocks for ionic liquids. R. Graf, N.V. Ignat'ev, **M. Finze**

1:50 36. (IL) Environmentally applied research towards hydrofluorocarbons (EARTH). **M.B. Shiflett**

2:10 37. (CL) Why a science-driven and methodological approach for future PFAS regulatory actions is necessary. **D.K. Papanastasiou**

2:30 38. (CL) Fluorination through electric glow discharge to create teflon-like surface. **A.E. Pavlath**

2:50 39. (CL) Critical analysis of the effect of transport phenomena and operational parameters on the performance of an intermediate-scale surface fluorination reactor. **I. Govender**, D. Lokhat, D. Ramjugernath, M. Lasich, L. Kock

3:10 Intermission.

Fluorine Chemistry Session IV

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

Financially supported by Oakwood Chemical

T. Mathew, D. A. Vicic, *Organizers*

R. G. Syvret, *Presiding*

3:30 40. (IL) Polymerization of hexafluoropropylene oxide (HFPO) in the presence of tetraalkylammonium, phosphonium and aryl-based perfluoroalkoxides. J.R. Harder, B.J. Jelier, **C.M. Friesen**

3:50 41. (IL) Tetrafluoro(trifluoromethyl)- λ^6 -sulfanyl alkyl amines: Syntheses, solvation studies and the preparation of N-tetrafluoro(trifluoromethyl)-sulfanyl ethyl-containing amino acids and peptides. **J.T. Welch**, M. Deng, S. Biswas, L. Ma

4:10 42. (IL) Towards the discrete fluoroanions. **G. Tavcar**, E. Gruden, J. Gnidovec, M. Tramsek

4:30 43. (IL) Direct deoxygenative transformations of fluorinated carboxylic acids and related C–O bond activations. **S.B. Munoz**

4:50 44. (CL) Fundamental curiosity of multivincinal inter-halide stereocenters. **O. Lessard**, D. Giguere

5:05 45. (CL) Adducts of molybdenum hexafluoride. M.D. van Hoeve, R. Bell, F. O'Donnell, S.D. Wetmore, M. Gerken

TUESDAY MORNING

Fluorine Chemistry Session V

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

Financially supported by Arkema

T. Mathew, D. A. Vicic, *Organizers*

C. M. Friesen, *Presiding*

7:45 46. (PL) Fluorinated amino acids as orthogonal tools in peptide and protein engineering. **B. Kokschi**

8:15 47. (IL) Studies on nucleophilic, carbenoid and radical fluoroalkylation and radical fluoroalkoxylation pathways. **S.G. Prakash**

8:35 48. (IL) Natural fluoronucleosides. **D. O'Hagan**

8:55 49. (IL) Background and development of N-fluoro-N-(tert-butyl)-tert-butanesulfonamide (NFBB). **T. Umemoto**, Y. Yang, G.B. Hammond

9:15 50. (IL) Photocatalytic difluoromethylarylation of unactivated alkenes via a (hetero)aryl neophyl-like radical migration. Z. Zhang, **W.R. Dolbier**

9:35 51. (IL) Fluorochemicals with unique applications in electronics. **R.G. Syvret**

9:55 Intermission.

Fluorine Chemistry Session VI

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

Financially supported by Shamrock Technologies

T. Mathew, D. A. Vicic, *Organizers*

M. Gerken, *Presiding*

10:10 52. (IL) Terra Incognita Halogen Chemistry: Surprising species with interesting properties. **S. Riedel**

10:30 53. (IL) Who's got the hydride? Reactions of cobalt carbonyl phosphine complexes with fluoroalkenes. **N.A. Rowlinson**, S. Behroozi, J.A. Ovens, **R. Baker**

10:50 54. (IL) XeF₂ coordination complexes of [XO₂]⁺ (X = Cl, Br); a stable complex of transient OCIF, F₅Ir--OCIF; and the mixed-oxidation-state Iridium (+5, +6) salt, [ClO₂]₂[cyclo-(μ-OIrF₄)₃]. M. Bortolus, G.J. LaChapelle, J.T. Goettel, H. Mercier, **G.J. Schrobilgen**

11:10 55. (IL) Pentafluoroethyl lead compounds in various oxidation states. **B. Hoge**, M. Grasse, B. Neumann, H. Stammler

11:30 56. (PL) Fluorochemicals, institutions and companies. Retrospective. **V.A. Petrov**

12:00 Lunch.

TUESDAY AFTERNOON

Fluorine Chemistry Session VII

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

Financially supported by W. L. Gore & Associates

T. Mathew, D. A. Vicic, *Organizers*

P. Musacchio, *Presiding*

1:30 57. (PL) Late-stage functionalizations. **T. Ritter**

2:00 58. (IL) Asymmetric assembly of trifluoromethylated scaffolds. **D. Cahard**

2:20 59. (IL) Enantioselective synthesis of CF₃-containing compounds using chiral phosphoric acid. **T.**

Akiyama

2:40 60. (IL) Copper-catalyzed difluoromethylation reactions. **W. Liu**

3:00 61. (IL) Taking advantage of strong boron-fluorine associations to functionalize perfluorinated centers. **F.J. Williams**

3:20 Intermission.

Fluorine Chemistry Session VIII

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

Financially supported by W. L. Gore & Associates

T. Mathew, D. A. Vicic, *Organizers*

W. Liu, *Presiding*

3:40 62. (PL) Limits of ligand innocence: Inverted fields and their influence over late metal reactivity.

K.M. Lancaster

4:10 63. (IL) Homoleptic cobalt and manganese pentafluoroorthotellurate complexes: In search of high oxidation states. **A. Pérez-Bitrián**, S. Riedel

4:30 64. (IL) Pressure resolved silver fluorine phase diagram. D. Kurzydowski, M. Derzsi, E. Zurek, **W. Grochala**

4:50 65. (IL) News on manganese fluorides. **F. Kraus**

5:10 66. (IL) Lewis acid behaviour of MoF₅ and MoOF₄ toward pyridine. **M. Gerken**, J. Bykowski, D. Turnbull, R.T. Boere, S.D. Wetmore

5:30 67. (CL) From Lewis superacidic pentafluoroorthotellurates to perfluorinated tritylium ions. **K.F. Hoffmann**, S. Riedel

5:45 68. (CL) Synthesis and application of [E-CF₃]⁻ (E = Se, Te) salts with a weakly coordinating cation. **K. Wels**, B. Hoge

WEDNESDAY MORNING

Fluorine Chemistry Poster II, Exposition, and Breakfast

Hyatt Regency Clearwater, Belleair Room

Co-sponsored by FLUO

D. A. Vicic, *Organizer*

T. Mathew, *Organizer, Presiding*

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24. Synthesis of tertiary alkyl fluorides by hydrofluorination of alkenes and deoxyfluorination of alcohols. **X. Bertrand**, J. Paquin, L. Chabaud

THURSDAY MORNING

Fluorine Chemistry Session IX

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

Financially supported by Honeywell

T. Mathew, D. A. Vicic, *Organizers*

B. Kocsch, *Presiding*

8:00 69. (PL) Branched superfluorinated amphiphiles. **P. Metrangolo**

8:30 70. (IL) Transforming fluorine-18 PET radiopharmaceutical discovery. **N. Vasdev**

8:50 71. (IL) Alternative mechanisms for DNA engagement by BET bromodomain-containing proteins.
W.C. Pomerantz

9:10 72. (IL) Organofluorine compounds for rapid cysteine functionalization. B.M. Lipka, V.M. Betti, D.S. Honeycutt, D.L. Zelmanovich, M. Adamczyk, R. Wu, H.S. Blume, C.A. Mendina, J.M. Goldberg, **F. Wang**

9:30 73. (CL) Novel heterocyclic fluorosilane scaffolds for application in the development of ¹⁸F-labeled radiopharmaceuticals. T.A. Singleton, H.J. Jun, C.D. Estrada, P. Deore, M. El-Zaria, M. Moran, A. Genady, E. Zhao, D. Burley, S. Edelmann, S. Luis-Rafael, Y.M. Marfatia, A. Eltantawy, A.F. Armstrong, P. DeRoy, A. Larivée, A. Toutov, R. Clark, C. Waldmann, S. Sadeghi, J. Lumb, **A. Kostikov**

9:50 Intermission.

Fluorine Chemistry Session X

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

Financially supported by Honeywell

T. Mathew, D. A. Vicic, *Organizers*

N. Vasdev, *Presiding*

10:10 74. (PL) Perfluorocarbon droplets for tomorrow's nanomedicine and materials science. **M. Krafft**

10:40 75. (IL) On principles of rational design of fluorinated electronic materials. **O.V. Boltalina**

11:00 76. (IL) Construction of fluorine-containing five-membered heterocycles: Defluorinative annulation of fluorovinyl metal species. **J. Ichikawa**

11:20 77. (CL) Telescoped synthesis of selective extractants via Ar-F nucleophilic aromatic substitution path. **I. Popovs**

11:40 78. (IL) Computational fluorine chemistry: Materials reactivity and degradation. **D.A. Dixon**, M.P. Confer, Y. Hu

12:00 Lunch.

THURSDAY AFTERNOON

Fluorine Chemistry Session XI

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

T. Mathew, D. A. Vicic, *Organizers*

M. Krafft, *Presiding*

1:30 79. (IL) 2,4-Dinitro-trifluoromethoxybenzene (DNTFB): a promising reagent in fluorine chemistry. **T. Billard**

1:50 80. (IL) Advances in the pursuit of utilitarian fluorinating reagents. **G.B. Hammond**, T. Umemoto, Y. Yang

2:10 81. (IL) Lone-pair directed diastereoselective and enantioselective hydrogen atom transfer fluorination. **T. Lectka**

2:30 82. (CL) C-H fluoromethoxylation of arenes by photoredox catalysis. **L.J. Goossen**

2:50 83. (IL) Searching for effective fluorination and defluorination methods: coherently interplay fluoride's basicity, nucleophilicity, ion-pairing, solvation, and anion-pi interactions. **H. Sun**

3:10 Intermission.

Fluorine Chemistry Session XII

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

Financially supported by Arkema

T. Mathew, D. A. Vicic, *Organizers*

G. B. Hammond, *Presiding*

3:30 84. (PL) Sustainable tools to access fluorinated molecules by C-H bond functionalization. **T. Besset**

4:00 85. (IL) Development of fluoroalkylation methodologies via visible light-induced C-F bond activation. **S. Shreiber**, G.A. Molander

4:20 86. (IL) New, one-step synthesis of the anesthetic agent sevoflurane, $(\text{CF}_3)_2\text{CHOCH}_2\text{F}$. X. Liu, C. Liu, A.V. Matsnev, P.V. Jog, M. Ulman, **J.S. Thrasher**

4:40 87. (IL) Hypervalent trifluoromethyl organobismuthanes as efficient catalysts in olefin difluorocarbenation. **J. Hyvl**, T. Louis-Goff, H. Trinh, A.L. Rheingold, C. Ehm

5:00 88. (CL) Catalyst free N-Arylation reactions of fluoro-benzotrifluorides - mechanisms and pathways. S. Nikitin, N.H. Fischer, C.B. Jacobsen, M.P. Meldal, **F. Diness**

5:20 89. (CL) Novel anionic N-heterocyclic carbenes featuring weakly coordinating borane and phosphorane moieties. **L. Zapf**, U. Radius, M. Finze

THURSDAY EVENING

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Banquet Reception

7:00 – 7:30

Banquet Dinner

7:30 – 9:45

7:30 PM – 7:35 PM

Welcome & Introductions

7:35 PM – 7:40 PM

Opening Remarks

7:40 PM – 8:30 PM

Dinner

8:30 PM – 9:00 PM

Presentation of Awards

ACS National Award for Creative Work in Fluorine Chemistry

Presented to Dr. Viacheslav A. Petrov

ACS Fluorine Chemistry Division 12th Biennial Distinguished Service Award *Presented to Dr.*

Olga V. Boltalina

ACS Fluorine Chemistry Division Doctoral Thesis Award

Presented to Dr. Scott T. Shreiber

ACS Fluorine Chemistry Division Undergraduate Research Awards

26th Winter Fluorine Conference Poster Awards

9:00 PM – 9:30 PM

“2023 National ACS Award for Creative Work in Fluorine Chemistry Address” - Dr. Viacheslav A. Petrov

9:30 PM – 9:45 PM

Vote of Thanks

FRIDAY MORNING

Fluorine Chemistry Session XIII

Hyatt Regency Clearwater, Aqualea Grand Ballroom

Co-sponsored by FLUO

T. Mathew, D. A. Vicic, *Organizers*

R. Baker, S. Shreiber, *Presiding*

8:00 90. (IL) Taming fluoride in the coordination sphere of Au and Pt to control fluorination steps. **T. Braun**, S. Rachor, S. Sander

8:20 91. (CL) Metal-mediated $\text{S}_{\text{N}}2$ -like derivatization of semi and perfluoroalkyl halides. **A.D. Asandei**

8:40 92. (IL) Novel hydrofluorocarbon cages through functional group transformations in polycyclic frameworks. **M. Etzkorn**, A.A. Fediuk, J.C. Thuan

9:00 93. (CL) Dry, effluent-free, fluorination of rare earth carbonates and oxylates. **R. Pretorius**

9:20 94. (CL) Assessing the activity of nucleophiles in HDF reactions. **D. Leong**, O. Ozerov

9:35 95. (CL) Rhodium-catalyzed intramolecular cyclopropanation of trifluoromethyl- and pentafluorosulfanyl- substituted allylic cyanodiazoacetates. **L.C. Peyrical**, M. Ouellet-Du Berger, M. Boucher, M. Birepinte, J. Paquin, A.B. Charette

9:50 Closing Remarks.