

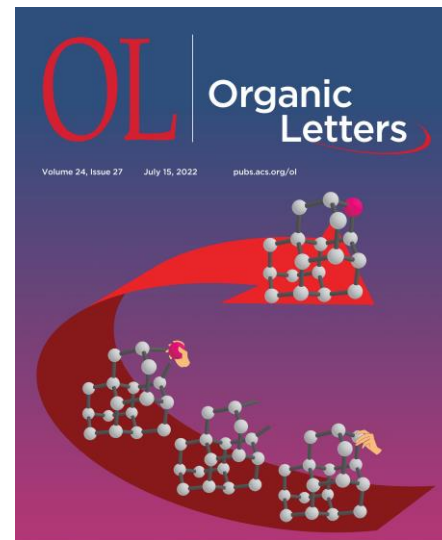
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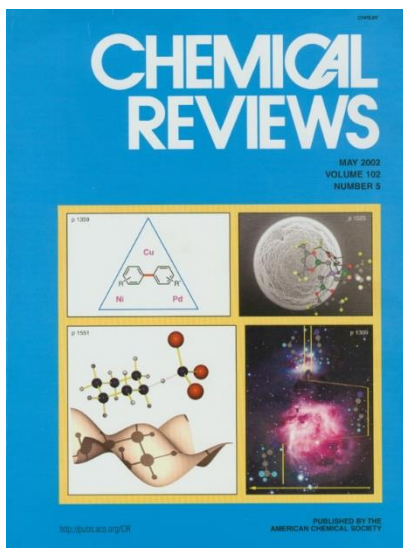
## Department of Organic Chemistry Kiev Polytechnic Institute: Current Research Activities

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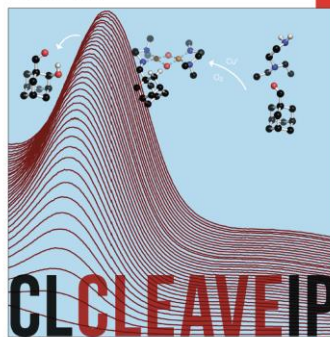


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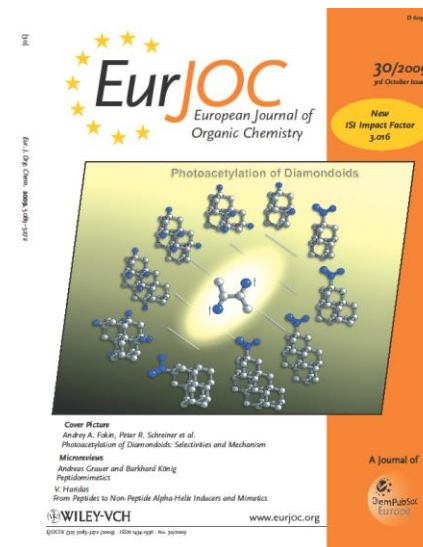
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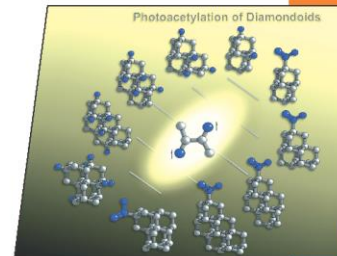
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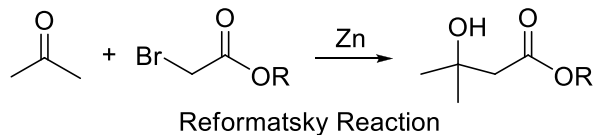
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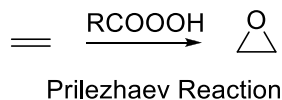
# Department of Organic Chemistry Kiev Polytechnic institute: History



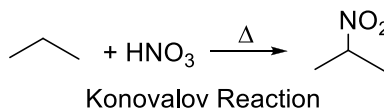
**Sergey N. Reformatsky**  
(Founder 1897)



**Nikolay A. Prilezhaev**  
Dep. Head (1914-1925)



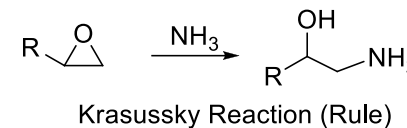
**Mikhail I. Konovalov**  
Dep. Head (1902-1904)



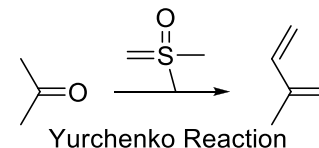
**Fedor N. Stepanov**  
Dep. Head (1960-1972)  
*Pioneered the adamantane  
chemistry in USSR*



**Konstantin A. Krasussky**  
Dep. Head (1908-1914)



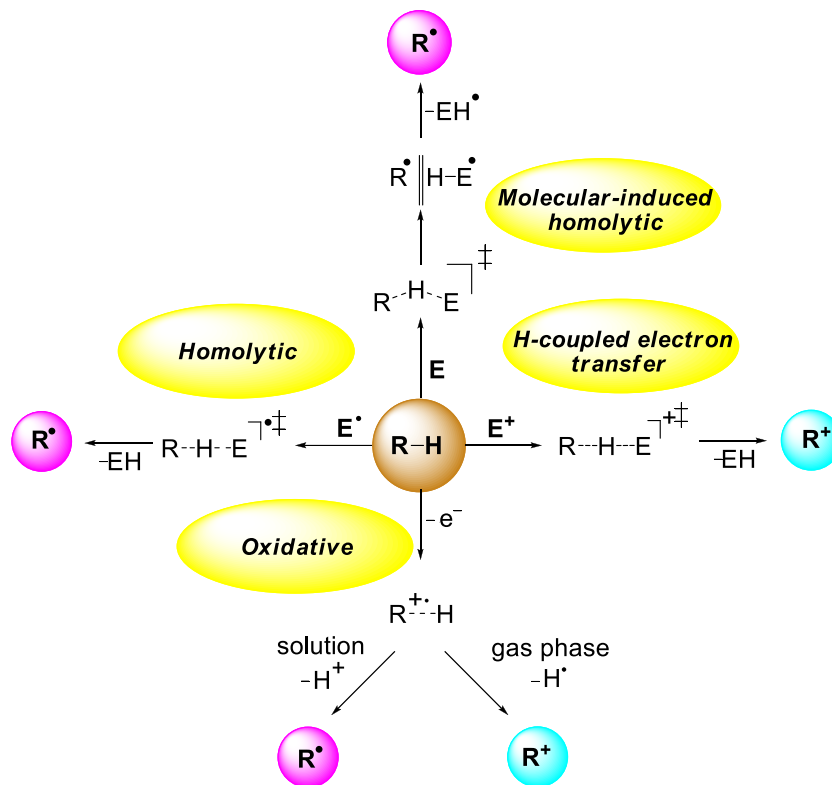
**Alexander G. Yurchenko**  
Dep. Head (1972-2008)



**Department of Organic Chemistry**  
**Kiev Polytechnic institute:**  
**Current Research Activities**

- Alkane chemistry:***
- CH- Activation mechanisms
  - New Methods for selective functionalizations
- sp<sup>3</sup>-Carbon materials:***
- Nanodiamonds for electronics applications
  - Metal-organic frameworks
- Noncovalent Interactions***
- *Unusual bonding situations, ultralong bonds*
- Fungal Biocatalysis***
- Selective biotransformations with white-rot fungi
- Medicinal Chemistry:***
- Antivirals, neuroprotectors, antimalarials
- Polycyclic and Cage Structures:***
- Cubanes, Diamondoids, other polycyclanes

# Alkane CH-Functionalizations: Methods and Mechanisms



Fokin, A. A.; Bakhonsky, V. V.; Pashenko, A. E.; Bakhiiev, E.; Becker, J.; Kunz, S.; Schreiner, P. R. Synthesis and Functionalization of Isomeric Sesquihomodiamantenes. *J. Org. Chem.* **2023**, *88*, 19, 14172–14177.

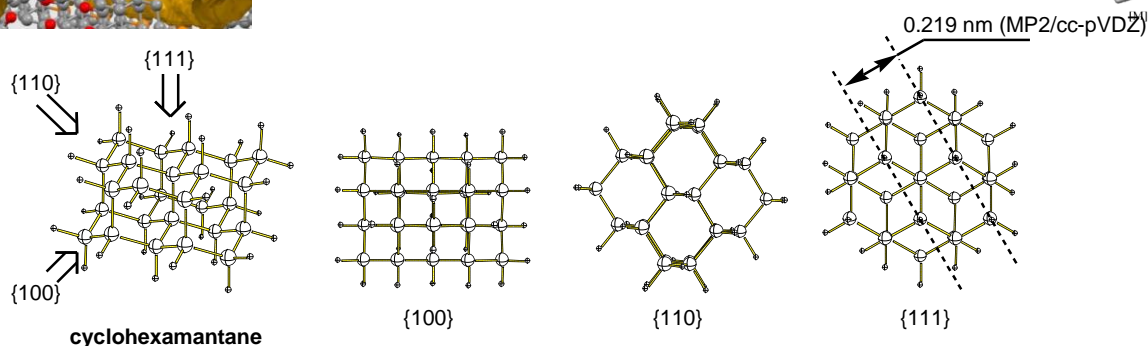
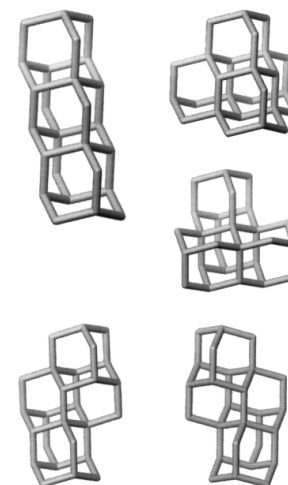
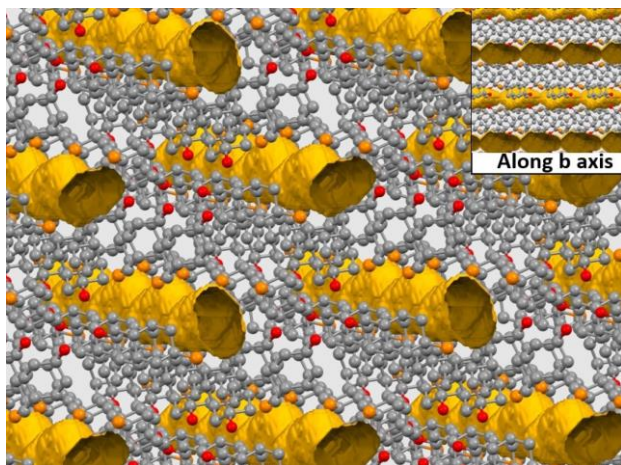
Fokin, A. A.; Reshetylova, O. K.; Bakhonsky, V. V.; Pashenko, A. E.; Kivernik, A.; Zhuk, T. S.; Becker, J.; Dahl, J. E. P.; Carlson, R. M. K.; Schreiner, P. R. Synthetic Doping of diamondoids through skeletal editing. *Org. Lett.* **2022**, *24*, 4845–4849. (Front cover).

Bakhonsky, V. V.; Pashenko, A. A.; Becker, J.; Hausmann, H.; de Groot, H. J. M.; Overkleeft, H. S.; Fokin, A. A.; Schreiner, P. R. Synthesis and antiproliferative activity of hindered, chiral 1,2-diaminodiamantane platinum(II) complexes. *Dalton. Trans.* **2020**, *49*, 14009–14016.

Becker, J.; Zhyhadlo, Y. Y.; Butova, E. D.; Fokin, A. A.; Schreiner, P. R.; Ferster, M.; Holthausen, M. C.; Specht, P.; Schindler, S. Aerobic aliphatic hydroxylation reactions by copper complexes: A simple clip-and-cleave concept. *Chem. Eur. J.* **2018**, *24*, 15543–15549.

Front cover.

# Cage Molecules



Smyrnov, O. K.; Melnykov, K. P.; Rusanov, E. B.; Suikov, S. Yu.; Pashenko, O. E.; Fokin, A. A.; Volochnyuk, D. M.; Ryabukhin S. V. Multigram synthesis of dimethyl stellane-1,5-dicarboxylate as a key precursor for the ortho-benzene mimics. *Chem. Eur. J.* **2023**, e202302454

Wiley, T. M.; Lee, J. R. I.; Brehmer, D.; Mellone, O. A. P.; Landt, L.; Schreiner, P. R.; Fokin, A. A.; Tkachenko, B. A.; de Meijere, A.; Kozhushkov, S.; van Buuren, A. W. X-ray spectroscopic identification of strain and structure-based resonances in a series of saturated carbon-cage molecules: Adamantane, twistane, octahedrane, and cubane. *J. Vac. Sci. Technol. A* **2021**, 39, 5, 053208.

Bakhonsky, V. V.; Pashenko, A. A.; Becker, J.; Hausmann, H.; de Groot, H. J. M.; Overkleeft, H. S.; Fokin, A. A.; Schreiner, P. R. Synthesis and antiproliferative activity of hindered, chiral 1,2-diaminodiamantane platinum(II) complexes. *Dalton. Trans.* **2020**, 49, 14009–14016.

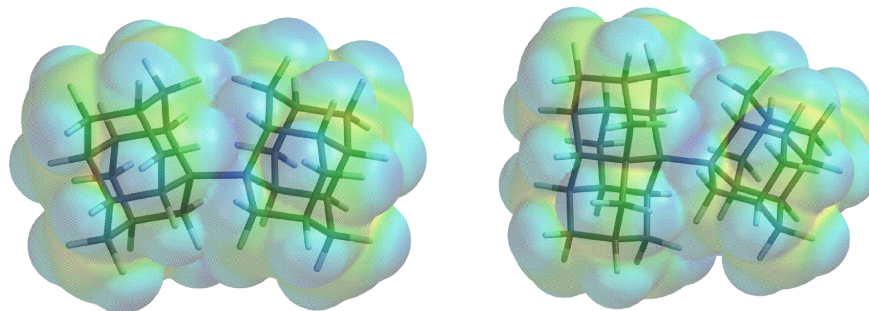
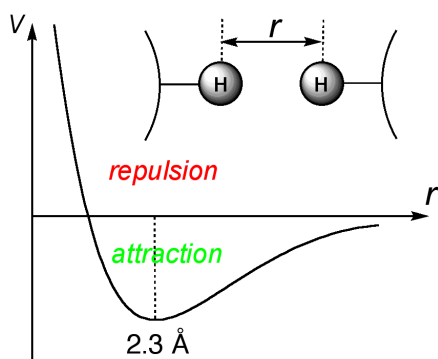
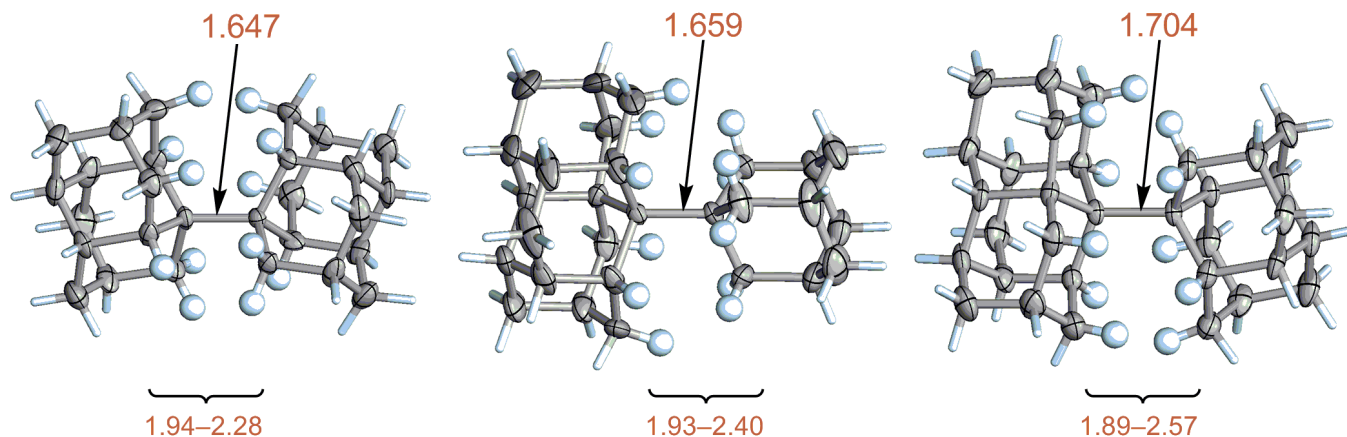
Tyborski, C.; Hueckstaedt, T.; Gillen, R.; Ott, T.; Fokina, N. A.; Fokin, A. A.; Schreiner, P. R.; Maultzsch, J. Vibrational signatures of diamondoid dimers with large intramolecular London dispersion interactions. *Carbon* **2020**, 157, 201–207.

Moncea, O.; Casanova-Chafer, J.; Poinso, D.; Ochmann, L.; Mboyi, C. D.M.; Nasrallah, H. O.; Llobet, E.; Makni, I.; El Atrous, M.; Brandes, S.; Rousselin, Y.; Domenichini, B.; Nuns, N.; Fokin, A.A.; Schreiner, P. R.; Hiero, J.-C. Diamondoid nanostructures as sp<sup>3</sup>-carbon-based gas sensors. *Angew. Chem. Int. Ed.* **2019**, 58, 9933–9938.

Lopatina, Ya. Yu.; Vorobyova, V. I.; Fokin, A. A.; Schreiner, P. R.; Marchenko, A. A.; Zhuk, T. S. Structures and dynamics in thiolated diamantane derivative monolayers. *J. Phys. Chem. C* **2019**, 123, 27477–27482.



# Noncovalent interactions: Abnormal Bonding Situations

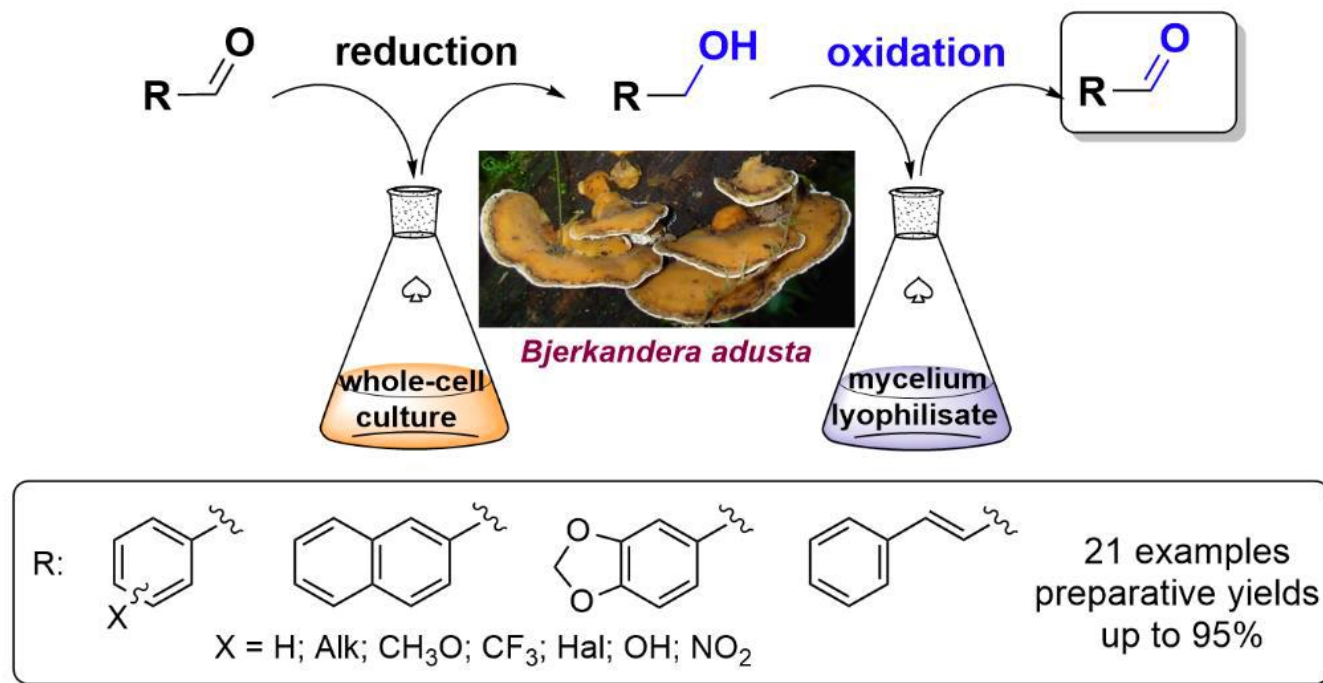


Fokin, A. A., Long but strong C–C single bonds: Challenges for theory. *Chem. Rec.* **2023**, e202300170 (10 p).

Tyborski, C.; Hueckstaedt, T.; Gillen, R.; Ott, T.; Fokina, N. A.; Fokin, A. A.; Schreiner, P. R.; Maultzsch, J. Vibrational signatures of diamondoid dimers with large intramolecular London dispersion interactions. *Carbon* **2020**, 157, 201–207.

Fokin, A. A.; Bahonsky, V. V.; Koso, T. V.; Hoc, N. T.; Serafin, M.; Zhuk, T. S.; Rodionov, V. M.; Schreiner, P. R. Noncovalent interactions in crowded olefinic radical cations. *Zh. Org. Pharm. Chem.* **2020**, 18, 1, 5–13.

# Fungal Biocatalysis



Babkina, VV; Albuquerque, W; Zhuk, TS. Fungal lyophilisates as catalysts for organic synthesis: Preparative oxidations with the white-rot fungus *Bjerkandera adusta*. *Mol. Cat.* **2023**, 549, 113451.

Zhuk, T.S., Skorobohatko, O.S., Albuquerque, W., Zorn, H. Scope and limitations of biocatalytic carbonyl reduction with white-rot fungi. *Bioorg. Chem.* **2021**, 108, p. 104651.

Zhuk, TS; Babkina, VV; Zorn, H. Aerobic C-C Bond Cleavage Catalyzed by Whole-Cell Cultures of the White-Rot Fungus *Dichomitus albidofuscus*. *ChemCatChem.*, **2022**, 14, 3, e202101408.

## Other WoS Publications (2023-2021)

S. Medvedko, M. Ströbele, J. P. Wagner. Synthesis of Sterically Encumbered Thiourea S-Oxides through Direct Thiourea Oxidation. *Chem. Eur. J.* **2023**, 29 (4), e202203005 (15).

V.Vorobyova, M. Skiba, A. Kushko. Tomato pomace extract as a novel corrosion inhibitor for the steel in industrial media: The role of chemical transformation of the extract and pro-inhibition effect. *J.Mol.Struct.*, **2022**, 1264, 133155.

V. Chornous, M. Vovk, M. Bratenko, Yu. Dmytriv, A. Rudnichenko, M. Skorobahatko, N. Kasian, L. Lisetski & I. Gvozdovskyy. Light-controllable chiral dopant based on azo-fragment: synthesis and characterization. *Liquid Crystals*, **2022**, 10, 1322-1337.

O. M. Shavrina, P. P.Onys`ko, Yu.V. Rassukana. Mono- and difluorination of methylene group in isomeric pyrimidinyl- and pyridinylacetates with N-fluorobenzenesulfonimide. *J. Fluorine Chem.*, **2022**, 261–262, 110027.

Aleksandrova, AM; Bezgubenko, LV; Rassukana, YV. Convenient preparative approaches to biorelevant dimethylphosphinoyl-derived compounds with the use of (trimethylsilyl)dimethylphosphinite. *Phosphorus, Sulfur, Silicon, Rel. Elem.*, **2022**, 197 (5-6), 571-573.

Rozhenko, AB ; Horbenko, YS ; Kyrylchuk, AA ; Zarudnitskii, EV ; Mykhaylychenko, SS ; Shermolovich, YG ; Grafov, AV. Stable Carbenes as Structural Components of Partial-ly Saturated Sulfur-Containing Heterocycles. *Molecules*, **2022**, 27, 5, 1458.

Shishkina, S.V., Shaposhnik, A.M., Baumer, V.M., Rudiuk, V.V., Levandovskiy, I.A. 4-[(Benzylamino)carbonyl]-1-methylpyridinium halogenide salts: X-ray diffraction study and Hirshfeld surface analysis *Acta Crystall. E*, **2022**, 78, 114–119.

Rudiuk, V.V., Shaposhnik, A.M., Baumer, V.M., Levandovskiy, I.A., Shishkina, S.V. 4-[(Benzylamino)carbonyl]-1-methylpyridinium bromide hemihydrate: X-ray diffraction study and Hirshfeld surface analysis. *Acta Crystall. E* **2022**, 78, 496–499.

Shavrina, O.M., Bezdudny, A.V., Rassukana, Yu. V. Synthesis and some transformations of all three isomers of alpha,alpha-difluoropyridinylacetone nitrile. *J. Fluor. Chem.* **2021**, 246, p. 109792

S.O. Sotnik, A.I. Subota, A.Y. Kliuchynskiy, D.V. Yehorov, A.S. Lytvynenko, A.B. Rozhenko, S.V. Kolotilov, S.V. Ryabukhin, D.M. Volochnyuk. Cu-Catalyzed Pyridine Synthesis via Oxidative Annulation of Cyclic Ketones with Propargylamine. *J. Org. Chem.* **2021**, 86(11), p. 7315–7325.