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Review of the abstract of the Doctoral thesis of dr. Evgeny V. Malykhin

"Aromatic Nucleophilic Substitution in liquid ammonia: synthesis, reaction mechanisms and application"

I am familiar with many papers of dr. Malykhin on nucleophilic substitution of hydrogen in nitroarenes with OH^- anions carried out in liquid ammonia. In fact I consider that oxidative nucleophilic substitution of hydrogen in 4-chloronitrobenzene is a result of fundamental importance for aromatic chemistry, indicating that nucleophilic addition to nitroaromatic rings proceeds faster at positions occupied by hydrogen than that occupied by chlorine. I have cited this paper many times. These results besides contribution to understanding reactivity of nitroarenes are of significant value for organic synthesis.

Another interesting aspects of work of dr. Malykhin presented in the abstract is demonstration of usefulness of liquid ammonia as an efficient, inexpensive and green solvent for many organic reactions. Value of liquid ammonia as a solvent of choice was shown inter alia in our work (e.g. *Tetrahedron*, **1968**, 175; *Chem. Eur. J.*, **1997**, 2025) and prof. Atherton (*Org. Biomol. Chem.*, **2012**, 5732; *J. Org. Chem.*, **1997**, 3286).

I can say much less about reactions in liquid ammonia of perfluoroarenes with ammonia and other nucleophiles. Electrophilic character of these arenes is well known and I have no doubts that the processes presented in the Abstract are interesting and valuable.

Thus in general I consider that the results presented in the Abstract form interesting and valuable contribution to organic chemistry.

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I hereby confirm the signature of prof. Mąkosza

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