

9<sup>th</sup> World Congress on

# Chemistry and Medicinal Chemistry

May 13-14, 2019 | Prague, Czech Republic

## Organic peroxides: From elusive intermediates to reagents and synthetic targets

**Vera A Vil, Yana A Barsegyan, Maria V Ekimova, Oleg V Bitjukov, Gabriel dos Passos Gomes, Igor V Alabugin and Alexander O Terent'ev**

N D Zelinsky Institute of Organic Chemistry, Russia

For a long time, organic chemists thought about peroxides as an explosive high energy functionality that should be either avoided or used in selected niche applications as radical initiators, explosives, or oxidizing reagents. However, a recent revolution, illustrated by the 2015 Nobel Prize in Medicine, brought organic peroxide in the spotlight as a new promising class of medicinal and agricultural agents. In recent decades, interest to organic peroxides has been boosted by the discovery of their antimalarial, anthelmintic, antitumor, growth regulation, and antitubercular activities.

I will outline new methods that allow efficient preparation of new classes of organic peroxides. In particular, I will disclose the utility of  $\text{BF}_3$ -catalyzed  $\text{H}_2\text{O}_2$ -mediated cyclizations that transform a variety of acyclic precursors,  $\beta$ -ketoesters and their silyl enol ethers, alkyl enol ethers, enol acetates, and cyclic acetals into  $\beta$ -hydroperoxy- $\beta$ -peroxylactones. The mild reduction of the respective  $\beta$ -hydroperoxy- $\beta$ -peroxylactones opened access to previously elusive cyclic

Criegee intermediates of Baeyer-Villiger reaction as stable  $\beta$ -hydroxy- $\beta$ -peroxylactones. Despite the great importance of this >100-year old reaction in organic synthesis and industrial chemistry, these intermediates have never been isolated and structurally characterized.  $\beta$ -Peroxylactones, the new class of organic peroxides, are stable compounds that can be useful for further synthetic transformations, as well as new targets for medicinal chemistry and plant protection.

*This study was supported by Russian Science Foundation (Grant № 18-73-00315).*

### Speaker Biography

Vera A Vil has completed her PhD at the age of 27 at the N. D. Zelinsky Institute of Organic Chemistry RAS, Russian Federation where she continues as a research scientist. Her studies focus on oxidative processes in organic synthesis, medicinal chemistry, and agrochemistry. She published over 30 publications that have been cited over 400 times (top 5 papers cited on average >50 times/paper).

e: vil@ioc.ac.ru

 Notes: