Латвийский институт органического синтеза

Химия гетероциклических соединений **2025**, *61*(1/2), 1–39

Химия гетероциклических соединений

Di-*tert*-butyl peroxide-mediated carbon–heteroatom bond formation reactions

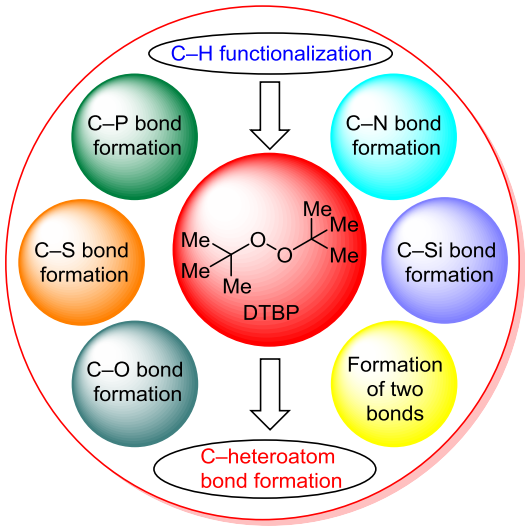
Ravi Varala[1]*, Kamsali Murali Mohan Achari[2], Mohammed Mujahid Alam[3]*, Seella Ramanaiah[2]

[1] *Scrips Pharma, Mallapur, Hyderabad 500076, Telangana, India & Research Fellow in Health Sciences, INTI International University, 71800 Nilai, Malaysia; e-mail: ravivarala@gmail.com*

[2] *Department of Chemistry, Sri Venkateswara College, University of Delhi, New Delhi-110021, India*

[3] *Department of Chemistry, College of Science, King Khalid University, Abha, 61413, Saudi Arabia*

Submitted May 27, 2024
Accepted after revision August 13, 2024



Di-*tert*-butyl peroxide is a commonly used organoperoxide in many oxidation transformations. The primary factors contributing to the increasing usefulness of di-*tert*-butyl peroxide include its affordability, eco-friendliness, exceptional efficacy, and capacity to substitute harmful or rare heavy metal oxidants. In this decennial update of noteworthy applications of di-*tert*-butyl peroxide, we comprehensively examined most of C−H functionalization and carbon−heteroatom bond formation reactions published from 2014 till the present. The review focuses on the advantages and disadvantages of using these synthetic organic transformations, as well as their scope and the underlying mechanisms involved.

Keywords: di-*tert*-butyl peroxide, organoperoxide, carbon−heteroatom bond formation, C−H functionalization, oxidation, radical reaction.

Contents