György Keglevich, Asian J Biomed Pharmaceut Sci, Volume:9
DOI: 10.4066/2249-622X-C2-019

allied academies

9th World Congress on
Chemistry and Medicinal Chemistry
May 13-14, 2019 | Prague, Czech Republic

György Keglevich

Budapest University of Technology and Economics, Hungary

Microwave irradiation and catalysis in Organophosphorus Chemistry– Green Synthesis of biologically active Organophosphorus Compounds

The microwave (MW) technique has become an important tool in organophosphorus chemistry [1–3]. In this paper, the advantages of MWs in different catalytic reactions are surveyed. The first case is, when the MW-assisted direct esterification of phosphinic acids becomes more efficient in the presence of an ionic liquid catalyst. The second instance is, when catalytic reactions, such as the phase transfer catalyzed (PTC) O-alkylation of phosphinic acids, or the Arbuzov reaction of aryl bromides are promoted further by MW irradiation. It is also an option that MWs may substitute catalysts, such as in the PTC alkylation of active methylene containing P-derivatives, in Kabachnik–Fields condensations, and in reluctant P=O deoxygenations. Another valuable finding of ours is that in the Hirao P–C coupling applying $Pd(OAc)_2$ as the catalyst, the slight excess of the >P(O)H reagent may substitute the usual P-ligands. It is also the purpose of this paper to elucidate the scope and limitations of the MW tool, to interpret the special MW effects, and to model the distribution and effect of the local overheatings. All these considerations were possible on the basis of the results of our quantum chemical calculations and utilizing the pseudo first order kinetic equation and the Arrhenius equation. The synthesis of dronic acid derivatives as drugs in the therapy of bone diseases is also discussed.

Speaker Biography

György Keglevich graduated from the Technical University of Budapest in 1981 as a chemical engineer. He got "Doctor of Chemical Science" degree in 1994, in the subject of organophosphorus-chemistry. He has been the Head of the Department of Organic Chemistry and Technology since 1999. Within organophosphorus chemistry, his major field embraces a P-heterocycles involving selective syntheses, as well as bioactive and industrial aspects. He also deals with environmentally friendly chemistry involving MW chemistry, its theoretical aspects, phase transfer catalysis, the development of new chiral catalysts, and the use of ionic liquids. He is the author or co-author of ca. 550 papers (the majority of which appeared in international journals) including ca. 70 review articles and 40 book chapters. He is, among others, the member of the Editorial Board of Molecules, Heteroatom Chemistry and Phosphorus, Sulfur and Silicon, and the Related Elements, and Current Microwave Chemistry. He is the Editor-in-Chief for Current Organic Chemistry and Current Green Chemistry, the co-Editor-in-Chief for Current Catalysis, Associate Editor for Current Organic Synthesis and Letters in Drug Design and Discovery, and Regional Editor for Letters in Organic Chemistry.

e: gkeglevich@mail.bme.hu

Notes: