22nd Iranian Chemistry Conference, 23-25 August, 2023
University of Kurdistan

Synthesis and spectroscopic characterization of two new phosphoramides

Ali Kalateh,[a] Mehrdad Pourayoubi[a,*]

[a]Department of Chemistry, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

[*] E-mail: pourayoubi@um.ac.ir

Recently, phosphoramide compounds have received considerable attention as a key factor for many biologically active molecules. They also show good performance as organic dyes, flame retardants and extractants. Therefore, developing an efficient and practical method to synthesize phosphoramides is of great importance [1]. Furthermore, Phosphoryl-based compounds, can be good representatives for complex reactions as well [2]. Consequently, in this work, the synthesis of two new phosphoramide compounds, $P(O)(OC_6H_5)_2(NHCSNHC_7H_{13})$ (1) and $P(O)(NHC_6H_{11})_2(NHCH(CH_3)(C_6H_5))$ (2) are reported. Characterization was performed by IR, NMR (^1H, ^{13}C, ^{31}P) and Mass spectroscopies. Some carbon atoms with two and three bonds separations from phosphorus appear as doublets, due to the coupling with phosphorus. Typical values of coupling constants are $^2J(P,C)$ = 6.1 Hz, $^2J(P,C)$ = 5.3 Hz and $^3J(P,C)$ = 4.5 Hz in (1) and $^2J(P, C)$ = 3.0 Hz and $^2J(P,C)$ = 6.1 Hz in (2).

Keywords: phosphoramide, synthesis, charactrization

References

[1] Y. Zhu, Y. Niu, Y. Niu, S. Yang, Organic & Biomolecular Chemistry (2021), 19, 10296-10313.
[2] Fahimeh Sabbaghi, Azam As'habi, Anahid Saneei, Mehrdad Pourayoubi, Abdul Ajees Abdul Salam, Marek Nec˘as, Michal Dus˘ek, Monika Kuc˘era´kova´ and Sudarshan Acharya, Acta Cryst. (2021), C77, 68-80.