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Short Communication

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Microwave-Assisted Catalytic Method for a Green Synthesis of Amides Directly from Amines and Carboxylic Acids

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Abstract:

Amide bonds are among the most widely abundant and fascinating types of linkages in organic synthesis and nature. They constitute the backbone of peptides and proteins and are important elementary linkages in many natural products and polymers. In addition, thanks to their stability in biological environments, they are often used in the construction of various drugs, insecticides, nutraceutics and chemical tools to study and modify biology. We demonstrate a microwave-assisted method for the direct solvent-free synthesis of amides from amines and carboxylic acids. This high efficiency, robustness, short reaction times, solvent-free and additional reagent-free method provides a major advancement in the development of an ideal green protocol for amide bond formation. The amide product isolation procedure is simple, environmentally friendly, and is performed with no need for chromatographic purification of secondary amides thanks to high yields. This methodology generates a limited amount of wastes, and a catalyst can be easily separated. The reactions are carried out in an open microwave reactor and allow the corresponding amides to be obtained in a fast and effective manner when compared to other procedures of the direct synthesis of amides from acids and amines reported so far in the literature.

Biography:

Adam P. Zarecki has completed his Master thesis from Adam Mickiewicz University in Poznan, Poland. In 2015 he commenced doctoral studies at the Institute of Bioorganic Chemistry of the Polish Academy of Sciences under the supervision of Prof. Wojciech T. Markiewicz and co-supervision of dr Jacek L. Kolanowski. His research interests include microwave assisted organic synthesis, amides, green chemistry, natural product, pharmaceutical chemistry.