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Progress in Synthesis of Aza-helicenes

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Creation of helical compounds with unique structural attributes and properties remains in focus of many researchers. Recent literature reveals many examples of exploiting helical structures as molecular springs,¹ selenoids,² tweezers,³ motors,⁴ dye-sensitized solar cell materials,⁵ OLED,⁶ and so on. In recent years, the preparation of heterohelicenes has been studied extensively in order to exploit the unique properties of these molecules.⁷ However, azahelicenes were not elaborated sufficiently and only a few reports have described the synthesis of such compounds despite their possible applications in various branches of chemistry.

Herein we report on a synthesis of series of novel aza- and diazahelicenes, which were prepared mainly by photocyclization of corresponding imine precursors. Reaction conditions (solvent, photocatalyst, type of UV, use of water scavenger) of photocyclization were optimized and enhanced. Usage of TEMPO (2,2,6,6-tetramethyl-piperidin-1-yl)oxyl) as oxidizing agent lead to improvement of yields up to 72%.

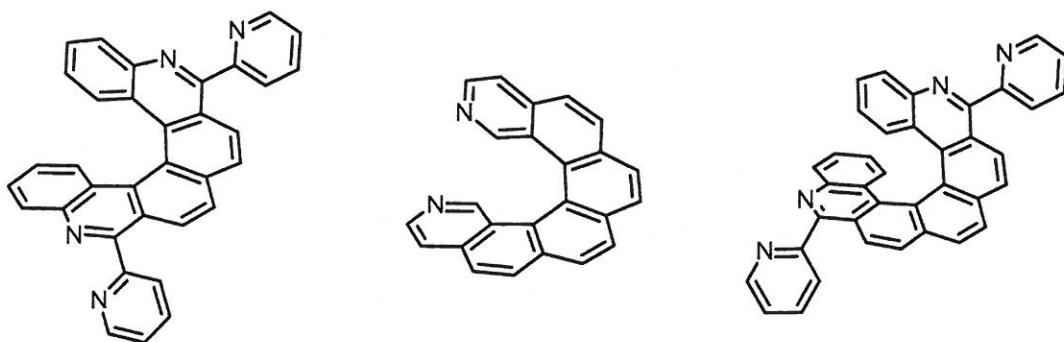


Figure 1

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