New Solvent-free Synthesis of Norbornenes Derived from Maleimides

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In 2006, Kas'yan et al. reported the reactions of several bicycle [2.2.1] hept-5-ene-endo, endo-2, 3- dicarboxilic anhydride with cyclic non-aromatic amines to obtain the correspondent norbornene N-alkylamides and then N-alkyl norbornene dicarboximides. It is known that these compounds were used as components of repellent compositions and as agents endowed with sedative activity. To prepare the carboximides is required two steps: formation of a derivative norbornene acid in benzene, and closure of imidic ring using several days with yields of 86% and 74%, respectively. In this work, we describe an alternative, shorter, and efficient method for the synthesis of the N-aryl norbornene dicarboximides using a solvent-free Diels–Alder reaction between cyclopentadiene and N-aryl-4-substituted maleimides, at room temperature, affording excellent yields (82-98%). The required N-aryl maleimides were prepared from reaction of substituted anilines with maleic anhydride, using ethyl ether as solvent, leading to moderate to good yields (60-80%).