Keggin-type heteropoly-11-molybdo-1-vanadophosphoric acid supported montmorillonite K-10 clay-catalysed one-pot multi-component synthesis of chromeno[2,3-b]indoles

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Abstract

One-pot three-component synthesis of twelve different chromeno[2,3-*b*]indole derivatives were achieved by the condensation of β-naphthol, oxindole and various substituted aldehydes. Two more chromeno[2,3-*b*]indole derivatives were also synthesized through one-pot two-component condensation of salicylaldehyde with oxindole/chlorooxindole. Both the condensations were achieved by using Keggin-type heteropoly-11-molybdo-1-vanadophosphoric acid, $H_4[PVMo_{11}O_{40}]$ supported on montmorillonite K-10 clay for about 10% as catalyst under environmentally benign solvent-free reaction condition. Shorter reaction time, excellent yield of product, sustainability of catalytic material and simple workup procedure under green experimental conditions are the advantages of this protocol.