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Modern Friedel-Crafts chemistry. Part-26. A facile synthesis of trans-2-methyl-1-phenylindan via rearranged intramolecular cyclialkylation of 1,2-diphenyl-2-methyl-2-propanol under Friedel-Crafts conditions (Article)

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Abstract

1,2-Diphenyl-2-methyl-2-propanol (1) was prepared by two alternative Grignard methods. Treatment of 1 with AlCl₃, AlCl₃/CH₃NO₂ or K10 clay catalyst in benzene, toluene or dichloromethane solvent at varying temperatures for varying times gave trans-2-methyl-1-phenylindan (4) as sole or major product. Side products including isomeric alkenes 7 and 8, isomeric chlorides 9 and 10, isomeric triarylated isobutanes 11-14, 1-methyl-3-phenylindan (5) and 2-methyl-1-phenylindene (6) were also detected by GC-MS technique. Mechanistic interpretations and explanatory comments are offered.

Indexed keywords

EMTREE drug terms: 1-methyl-3-phenylindan; 1,2-diphenyl-2-methyl-2-propanol; 2-benzyl-1-phenyl-1-propene; 2-methyl-1-phenylindan; 2-methyl-1-phenylindene; 2-methyl-1,2,3-triphenylpropane; aluminum chloride; benzene; dichloromethane; indan derivative; propane; propanol; propylene; toluene; unclassified drug

EMTREE medical terms: alkylation; article; arylation; catalyst; cyclization; gas chromatography; Grignard reaction; mass spectrometry; reaction analysis; synthesis; temperature dependence

Chemicals and CAS Registry Numbers: aluminum chloride, 7446-70-0, 7784-13-6; benzene, 71-43-2; dichloromethane, 75-09-2; propane, 74-98-6; propanol, 62309-51-7, 71-23-8; propylene, 115-07-1; toluene, 108-88-3

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