REACTIONS OF 3,7-DIMETHYLENEBICYCLO[3.3.1]NONANE WITH WEAK ACIDS

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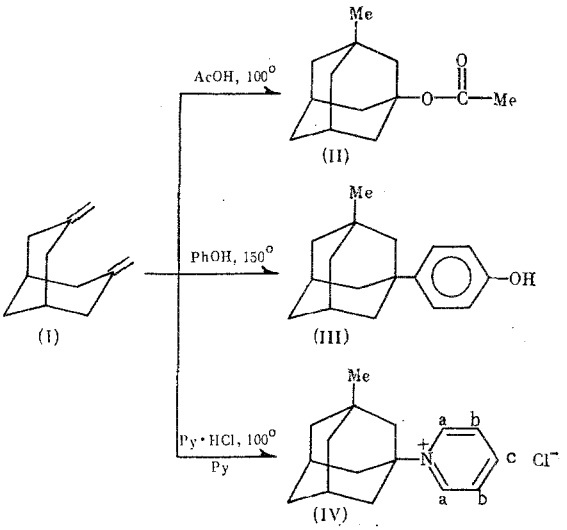
It is known that acetic acid does not add to common olefins in a direct reaction [1]. We found that 3,7-dimethylenebicyclo[3.3.1]nonane (I) adds protonic acids such as AcOH, phenol, and pyridine hydrochloride in pyridine



1-Methyl-3-acetoxyadamantane (II), yield 80%. PMR spectrum (60 MHz, CCl_4, δ, ppm): 0.81 s (3H, CH_3), 1.79 s (3H, CH_3), 1.07-2.41 m (14H, adamantane fragment).

1-Methyl-3-(4-hydroxyphenyladamantane) (III), yield 85%, mp 132-134°. PMR spectrum (60 MHz, CCl_4, δ, ppm): 0.68 s (3H, CH_3), 1.08-2.20 m (14H, adamantane fragment), 4.38 br. s (1H, OH), 6.55 and 7.05 (4H, benzene ring, the AA'BB' system, J_{AB}=9 Hz). N-(3-Methyladamantyl)pyridinium chloride (IV), yield 87%, mp 236-238°C. PMR spectrum (60 MHz, CF_3COOH, δ, ppm): 0.90 s (3H, CH_3), 1.63-2.03 m (14H, adamantane fragment), 8.36 m (2H, H_b), 8.73 m (1H, H_c), 9.00 m (2H, H_a).

The results of the elemental analysis of compounds (II)-(IV) correspond to the empirical formulas.

The formation of adamantane derivatives shows that we can assume that at the first stage of the reaction, diene (I) becomes protonated by weak acids, as in the reaction with strong acids [2].

LITERATURE CITED

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2. H. Stetter and J. Gärtner, Chem. Ber., 99, 925 (1966).

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