

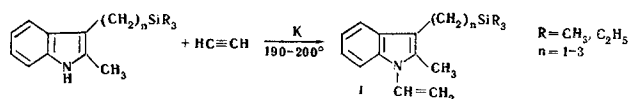
SYNTHESIS OF SILICON-CONTAINING N-VINYLINDOLES

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In studying the properties of indole derivatives with a silicohydrocarbonyl substituent in the β -position [1] we have found that these compounds react with acetylene under pressure in the presence of alkaline catalysts.



The optimum yields (up to 70%) are obtained by using 2–2.5% of metallic potassium as catalyst at a temperature of 190–200° C. The reaction takes place in 1–2 hr without the cleavage of the silicon-carbon bond. The silicon-containing N-vinylindole derivatives are viscous liquids distilling without decomposition. Their structure was confirmed spectroscopically [1460 and 1600 cm^{-1} (indole nucleus), 1240–1250 cm^{-1} (Si—C bond), 1640 cm^{-1} (—CH=CH₂) group; absorption band in the 3400–3500 cm^{-1} region characteristic for the NH bond of the initial indoles absent]. Compound I readily polymerizes in the presence of acidic catalysts ($\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$, BF_3 , etc.) with the formation of light green powders soluble in ether, benzene, toluene, and dioxane, and insoluble in ethanol, acetone, and water.

α -Methyl- β -(triethylsilylmethyl)-N-vinylindole. A mixture of 9.5 g of α -methyl- β -triethylsilylmethylindole, 0.25 g of metallic potassium, and 90 ml of dioxane was stirred in a 250 ml rotating autoclave, acetylene was forced into an initial pressure of 13 atm, and the autoclave was heated at 190° C until the absorption of acetylene ceased. Distillation yielded 5.5 g (52%) of a substance with bp 149–150° C (2.5 mm); d_4^{20} 0.9985; n_D^{20} 1.5750. Found, %: N 4.98; MR_D 94.28. Calculated for $\text{C}_{18}\text{H}_{27}\text{NSi}$, %: N 4.91; MR_D 92.30.

α -Methyl- β -(3-methyldiethylsilylpropyl)-N-vinylindole. Bp 164–165° C (3 mm); d_4^{20} 0.9738; n_D^{20} 1.5576. Found, %: N 4.61; MR_D 98.92. Calculated for $\text{C}_{19}\text{H}_{29}\text{NSi}$, %: N 4.66; MR_D 96.93.

REFERENCES

1. M. F. Shostakovskii, N. V. Komarov, and V. K. Roman, KhGS [Chemistry of Heterocyclic Compounds], 4, 1135, 1968.

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