

## Polymerization of 9-Vinylacridine with a Sodium-Naphthalene Complex

By SABURO MORIWAKI, SHIGEKAZU KUSABAYASHI, and HIROSHI MIKAWA\*

(Department of Applied Chemistry, Faculty of Engineering, Osaka University, Yamadakami, Osaka 564, Japan)

**Summary** 9-Vinylacridine (VAc) was polymerized with a sodium-naphthalene complex to give poly-9-vinylacridine

It has been reported that 9-vinylacridine is polymerized by radical initiators but that cationic and anionic polymerization does not occur.<sup>1</sup> That cationic polymerization can in fact take place has since been shown by us;<sup>2</sup> we now confirm that anionic polymerization is also possible.

VAc monomer was prepared as reported previously, and was used after purification by chromatographic adsorption on  $Al_2O_3$  (benzene as eluant) followed by recrystallization from n-hexane. Polymerizations were carried out at room temperature in high vacuum ( $10^{-5}$  mm) using rigorously purified tetrahydrofuran as solvent. Part of the solvent was distilled *in vacuo* on to monomer and the monomer solution thus obtained poured into the initiator solution with stirring. The green colour of the initiator solution

changed immediately to red and then to yellow-brown in a few seconds. Within several hours, the colour changed to green and a yellow precipitate gradually appeared. After 50 h the polymer yield was *ca.* 100%. The i.r. spectrum was identical to that of polymers prepared by the radical and cationic initiator. The polymer had a molecular weight of *ca.*  $10^4$  (membrane osmometer) and a softening point of *ca.* 268 °C. The polymer was soluble in  $CHCl_3$  and pyridine, partly soluble in tetrahydrofuran, insoluble in n-hexane, benzene, and methanol, and underwent a swelling in dioxan.

If, when the first monomer was consumed, the second monomer was added, an almost quantitative polymer yield was again obtained based on the total monomer, suggesting the formation of "living polymer."

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<sup>1</sup> R. B. Homer and M. Shinitzky, *Macromolecules*, 1968, **1**, 469.

<sup>2</sup> Y. Seoka, K. Tanikawa, H. Hirata, S. Kusabayashi, and H. Mikawa, *Chem. Comm.*, 1969, 652.