

The variations of copolymer yield with polymerization time at 90°C are shown in Fig. 2. The rate of copolymerization was accelerated by pressure, however yield itself was considerably small and the effect of polymerization time was not so marked as for the effect of pressure.

The result of elementary analysis and molecular weight of copolymer were shown in Table 1. The copolymers were all of very low molecular weight and the molecular weight were not affected by pressure. These facts suggest that this copolymerization system is different from the customary copolymerization using radical initiator. However, there is no definite evidence that this is due to the different copolymerization mechanism.

Table 1 Elementary analysis and molecular weight of copolymer

pressure (kg/cm ²)	elementary analysis (%)				molecular weight
	C	H	O	N	
100	81.97	5.47	4.35	8.21	2000
2000	81.99	5.44	3.99	8.53	2500
3000	81.57	5.47	4.24	8.72	1600
4000	81.28	5.47	4.52	8.73	2000

As shown in Table 1, the content of nitrogen in the copolymer increased with pressure. These facts indicate that the fumaronitrile rich copolymer is easy to form under high pressure because its penultimate effect tends to disappear with pressure and are in agreement with our previous conclusion that high pressure is presumed to be effective for eliminating the penultimate effect on the copolymerization.

Reference

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