

KAWASAKI STEEL TECHNICAL REPORT

No.23 (October 1990)

*R&D of High-Technology Research Laboratories,
Commemorating the 20th Anniversary
of the Technical Research Division*

Production Process and Characteristics of Styrene Oligomers

Yoshihiro Naruse, Masahiko Kajioka, Seiji Yamamoto

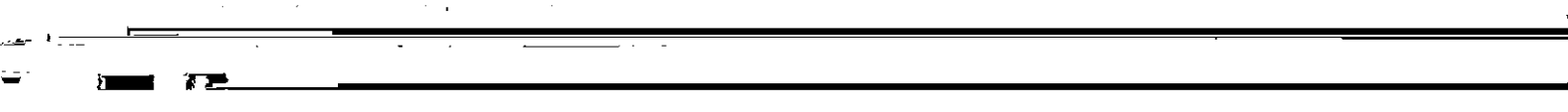
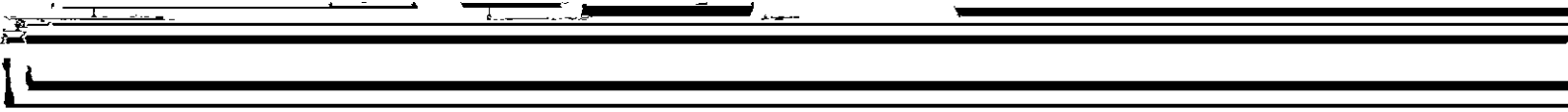
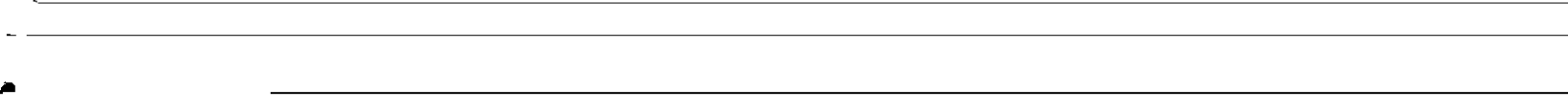
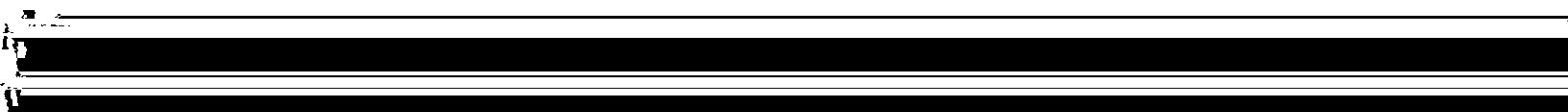
Synopsis :

Production Process and Characteristics of Styrene Oligomers*

Synopsis:

As a new product in the chemical field, the authors have developed styrene oligomers (KSTO) which are differ-

styrene has been commercially produced. The linear _____ As is realized by the reaction mechanism mentioned



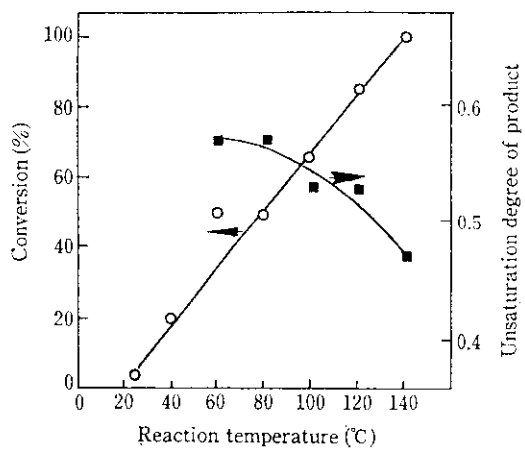


Fig. 2 Relationship between reaction temperature and styrene conversion and unsaturation

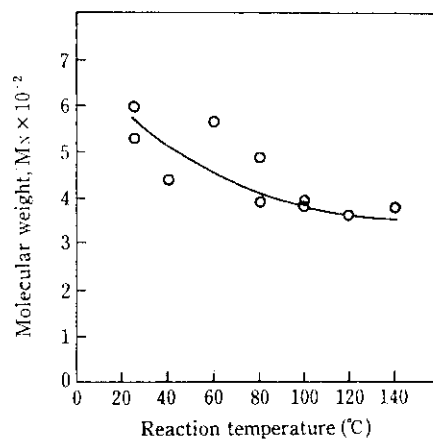
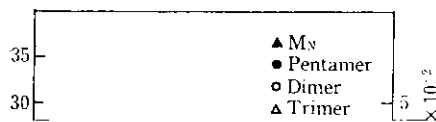
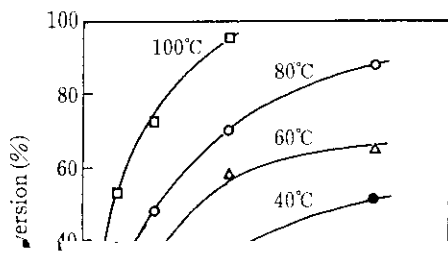


Fig. 3 Effect of reaction temperature on molecular weight (0.8 wt.% N-324 vs styrene; reaction

catalyst of 0.8 wt.% N-324

140°C. The degree of unsaturation evaluated for some products is shown in Fig. 2. It shows that D_u decreases with an increase of reaction temperature. Also, the





oligomer is produced by continuous bulk polymerization using Nafion. Moreover, no chemical engineering data such as decisions regarding the reaction type and the necessary scaling up for industrialization have been reported. A large sample is required to determine suitable commercial applications. Under these circumstances, the 10 //h continuous reaction equipment was built in Chiba Works and its flow diagram is shown in

400

△

Mn : Number-av. mol. weight

Mw : Weight-av. mol. weight

Running time (h)

	E ₁	E ₂
--	----------------	----------------

(2) Several kinds of styrene oligomer with different molecular weight and degree of unsaturation are