



O RINGS

UPPER DISC
SAMPLE

LOWER DIE

el.

hydraulic press capable of
of the pressure vessel.
carried out at a dose
rization studies, samples
in vacuo at a dose rate of
en carried out *in vacuo*
ough the heat exchanger

from a 6 kilocurie ⁶⁰Co
ained by glass dosimetry
a G value of 15.6 for the

a timed period for post-
he pressure vessel into
n in a sintered crucible.
ughly washed to remove
nd polymethacrylamide
. Residual water was
te and calcium acrylate
e densities of the mono-
out in mixed liquid by a

for the four crystalline
ation of 90,000 psi to the
acrylamide has the effect
ne pressure increases the

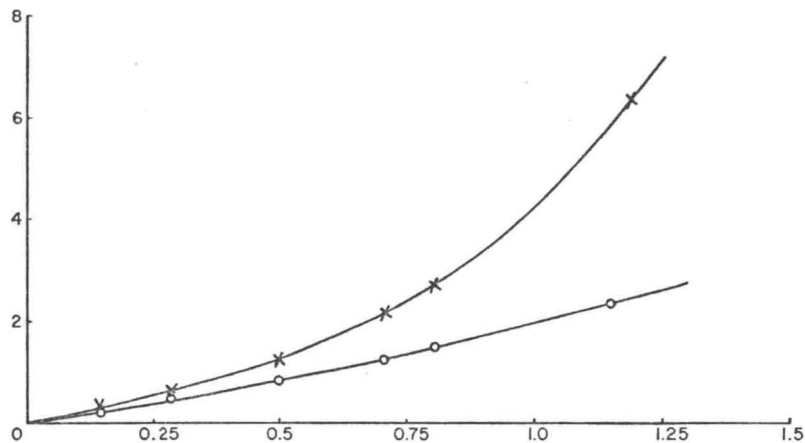


Figure 2.

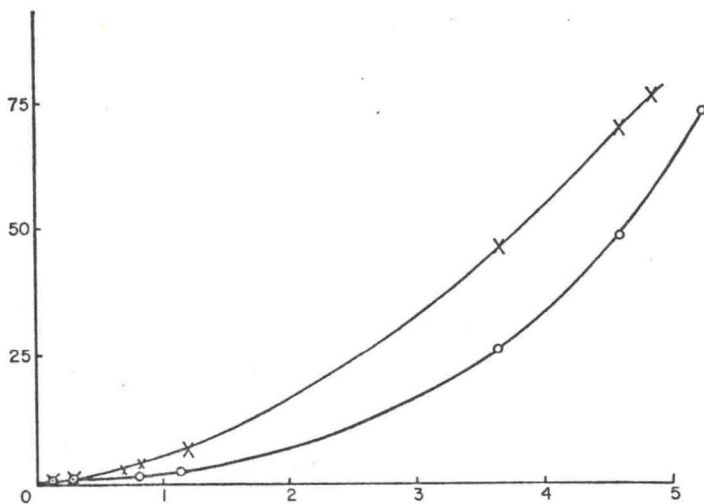


Figure 3.

yield from barium methacrylate and calcium acrylate up to 100% conversion to polymer.

The solid state polymerization of acrylamide at atmospheric pressure is characterized by a fast reaction to high conversion. Pressurization of the monomer crystals appreciably modified this reaction. Polymerization is retarded (except in the very initial stages), Figure 2 indicating a linear relationship with dose up to 2% polymer formation. Only at high conversions, when the rate increases, is it accelerated by pressure (Fig. 3).

In the case of both acrylamide and methacrylamide there is no evidence of any induction period when pressure is applied. Bamford⁸ concluded that it was necessary for some polymer to be formed before applied stress could modify the in-source reaction, so it would seem that pressures up to