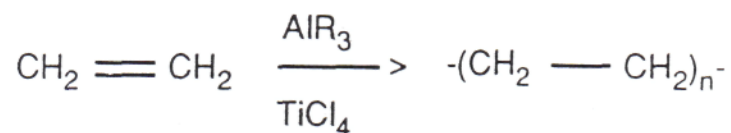


XVI. Ziegler Polymerization of Ethylene

A. Reaction



B. Procedure

Prepare a gas bubbler from a 5 mL vial with septum cap bearing two needles. Add 3 or 4 mL of heptane and lower one needle into the heptane. The other needle, the exit port, should remain above the heptane.

In a 10 mL round bottom flask place about 8 mL of dry heptane and a spin vane. Attach a septum cap with two needles, both placed above the heptane. Connect one of the needles to the exit port of the bubbler using a small section of rubber tubing. Connect the inlet of the bubbler to the ethylene source and briefly flush the system with ethylene. Turn on the stirrer and by means of hypodermic syringes, add to the reaction vial 0.5 mL of a 25% solution of triisobutyl aluminum in heptane followed by 2-4 drops of titanium tetrachloride. Turn on the ethylene to give a brisk stream of bubbles and pass ethylene through the system for 10-15 min. If the reaction mixture becomes difficult to stir, it may be shaken instead. To terminate the reaction, remove the flask and add about 1 mL of methanol while shaking. Collect the polyethylene by filtration on the Hirsch funnel and wash with methanol containing a little HCl. Wash once more with methanol and allow the polyethylene to dry to constant weight.

C. Results

Weight of Polyethylene _____ mg