POLYMERISATION PROCESSES tree Radical Addition polymn: 1- Chair Initiation! - Homolytic cleavage to form free radicals. The f.R. attack on monomer to initiale chain us n. Initialiers may the downol wir compaser ago compas, peroxides, hydroperoxides, peracide, peresters etc. R-C-0+0-E-R - 2R-C-0unstable (A R = & Ms -> bengoy R' + Ey Ech - R-ch-ch monomer 1. 2. Chair propagation: - F.R. then attacles on another monomer to give new A.R., which again attack on another monomer, thus chain R-CH-CH-CH-CH-CH-CH New F.R. 3. Chain termination! - By any of the Two ways! (a) by combination! RfcH-chtaticht + ch-chtating (b) by disproportionation! Rfch-41) ch-ch + ch-45 ch-ch > Rf 45-ch > Rf 2 - Cationi C prolymenisation! -. 1- Chain initiation: - 4504, BF3, Alcy, Sncly etc. age generally used

as chain initialor in some of a trace of water. BF3 +40 = [BF30H] + HE In general HB = HD + BD proton anion

HE + EN=CH -> CH3-CH carbocation

2- Chair propagation! -

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- Chain Institution 1 - Bases or organomethallic compds.

CH = CH + K NHO -> [H N - CH - CH] K P

acryloniticle Anionic adduct

2- chain propagation: - [H N - CH - CH] K P + CH = CH

CN |

Induction | CH |

LH N - CH - CH - CH |

LH N - CH - CH - CH |

LH N - CH - CH - CH |

LH N - CH - CH - CH |

NM2H

N

A NIDNIC POLYMERISATION

3- Chair termination: - [H3 NfcH-CH] + CH] K® + NH3

[H3NfcH-CH] + KNH3

[H3NfcH-CH] + KNH3

Co-Ordination polymerisation or Leigher Natta Polymerisation Coordination addition poly m is catalysed by a special type of comprises of two comprenents - strong as zoigle reatter catalyst - It comprises.

Hallite of the comprenents -(i) Halioles of transition metals from 3p IV - VIII (e.g. Ti, Fr, Mo, V, Ni, Rhoto known and the transition metals from 3p IV - VIII (e.g. Ti, Fr, Mo, V, Ni, Rhoto known as catalyst-(11) Organometallic compose og hydrides, aryls or alkyls of spr I-IV metals are known as co-catalysts Most widely used zaigler-Natta catalysts are: Co-catalysts catalysts (Al (45) 3 + Tidy Tidy ~ (ii) A((5H5) 3 (Til) Al (GH5) och + Trdy Mechanism: (i) Formation of complex due to overlapping of IT cloud of athere and empty obbilal of Ti. (ii) Insertion of alkene b/w Ti & c in Ti-c bond.

(iii) Generation of versail site at Ti due to inhantelecular rearrangement and historical site at Ti due to inhantelecular rearrangement. (Iv) Termination of chain by molecules having active H. Ti - ey - e4 - e4 - e43 Ti - ctj - ctj - ctj Insertion of /1 2.N. catalyst Ti-c-bond. CH3-CH-(H3-CH)-CH2(H3 Tominalion,) Ti + CH2-CH2 CH3

CH3-CH-(H3-CH)-CH2(H3

HX

HX Significance: - (i) This polymn is stereo selective (gps are arranged in definite order) and lunes permits Stereo chemical control Preferentially isotactic (highly stereoregular) polymers are Jouned by this method. Isotactic have superior priority than atactic. (i) It-leads to the formation of linear chain polymers, devoid of branchip having high density, high m-p., proper packing