telomerization

The formation of an addition oligomer, having uniform end groups X' ... X'', by a *chain reaction* in which a *chain transfer* limits the length of the polymer ('telomer') produced. An example is the polymerization of styrene in bromotrichloromethane solution ($X' = CCl_3$, X'' = Br), where Cl_3C' radicals are formed in the initiation step to produce $Cl_3C[CH_2CHPh]_nBr$, with n greater than 1 and often less than ca. 10:

$$\dot{\mathbf{C}} \text{Cl}_3 + \text{CH}_2 = \text{CHPh} \longrightarrow \text{Cl}_3 \text{CCH}_2 \dot{\mathbf{C}} \text{HPh}$$
 chain propagation
$$\text{Cl}_3 \text{CCH}_2 \dot{\mathbf{C}} \text{HPh} + \text{CH}_2 = \text{CHPh} \longrightarrow \text{Cl}_3 \text{CCH}_2 \text{CHPhCH}_2 \dot{\mathbf{C}} \text{HPh}$$

$$\text{Cl}_3 \text{C} (\text{CH}_2 \text{CHPh})_{n-1} \text{CH}_2 \dot{\mathbf{C}} \text{HPh} + \text{CH}_2 = \text{CHPh} \longrightarrow \text{Cl}_3 \text{C} (\text{CH}_2 \text{CHPh})_n \text{CH}_2 \dot{\mathbf{C}} \text{HPh}$$

$$\text{Cl}_3 \text{C} (\text{CH}_2 \text{CHPh})_n \text{CH}_2 \dot{\mathbf{C}} \text{HPh} + \text{BrCCl}_3 \longrightarrow \text{Cl}_3 \text{C} (\text{CH}_2 \text{CHPh})_{n+1} \text{Br} + \text{Cl}_3 \text{C}^* \text{ chain transfer}$$

See also *oligomerization*. 1994, *66*, 1173

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