

ORGANIC CHEMISTRY 1 LECTURE GUIDE 2019

BY RHETT C. SMITH

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# Organic Chemistry 1 Lecture Guide 2019

By Rhett C. Smith, Ph.D.

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Companion Books from the Proton Guru:

*Organic Chemistry 1 Reactions and Practice Problems 2019*

by Rhett C. Smith

*Organic Chemistry 1 Primer 2019,*

by Rhett C. Smith, Andrew G. Tennyson, and Tania Houjeiry

Alkenes can be used as starting materials to make **polymers**.

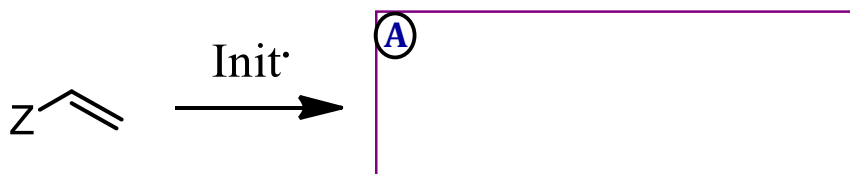
**POLYMER:**

**MONOMER:**

**REPEAT UNIT:**

**EXAMPLE:**

Notes

**Radical Polymerization of an alkene:****Mechanism of Polymer chain growth:**

Unlike the other radical reactions of alkenes that we have seen, there is **ONLY** an initiator added to the alkene, no other reagents. A common radical initiator is Benzoyl Peroxide,  $(PhC(O)O)_2$

Notes

**Cationic Polymerization of an alkene:**

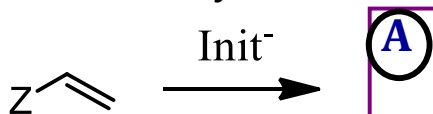


**B** Chain Growth:

Lewis acids can be good initiators for a cationic polymerization:

**C**

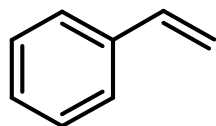
Notes

**Anionic Polymerization of an alkene:**B Chain Growth:

You may notice that in the other reactions of alkenes, a cation or radical was the key intermediate. This is because it is more difficult to generate a carbanion. In order to do a successful anionic polymerization, **the group Z must:**

C

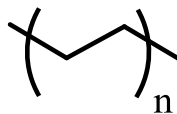
Notes



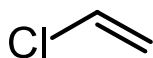
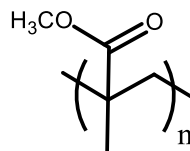
**(A)** polystyrene



polyethylene



poly(methyl methacrylate)



**(D)** Poly(vinyl chloride) (PVC)

Notes