Tutorial 2

CSO203: Inorganic Molecules, Materials & Medicines

1. Explain the roles of $TiCl_4$ and Et_3Al in Zeigler-Natta catalyst.

2. Draw a plausible mechanism of the zirconium-based catalytic cycle for ethylene to polyethylene conversion.

3. How can you terminate the polymer propagation step? Show the steps.

4. What is tacticity? Explain how one can prepare isotactic or syndiotactic polymers.

5. Explain why the geometry of Wilkinson's catalyst around the Rh^I center is square planar but not tetrahedral.

6. Explain the catalytic cycle of Wilkinson's catalyst, considering an alkene of your choice. Show the electron counts in every step.

7. What is the rate-determining step in Wilkinson's catalytic cycle? What is the fastest step in the same catalytic cycle?

8. Reaction of RCHO using Wilkinson's catalyst is not a catalytic reaction. Explain why.