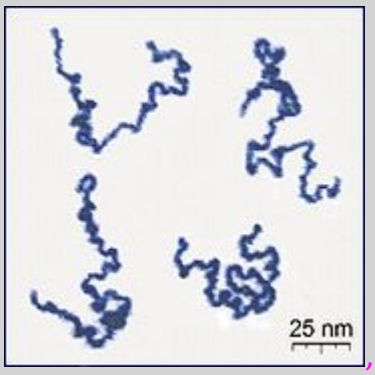
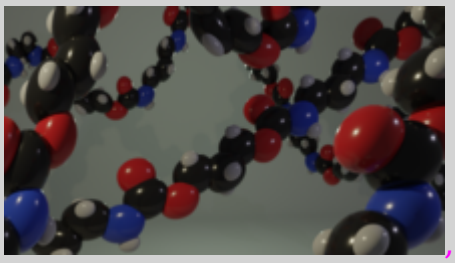
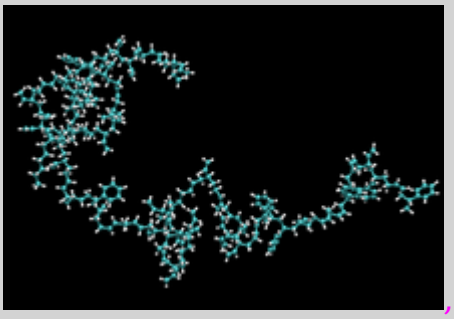
natural language artificial

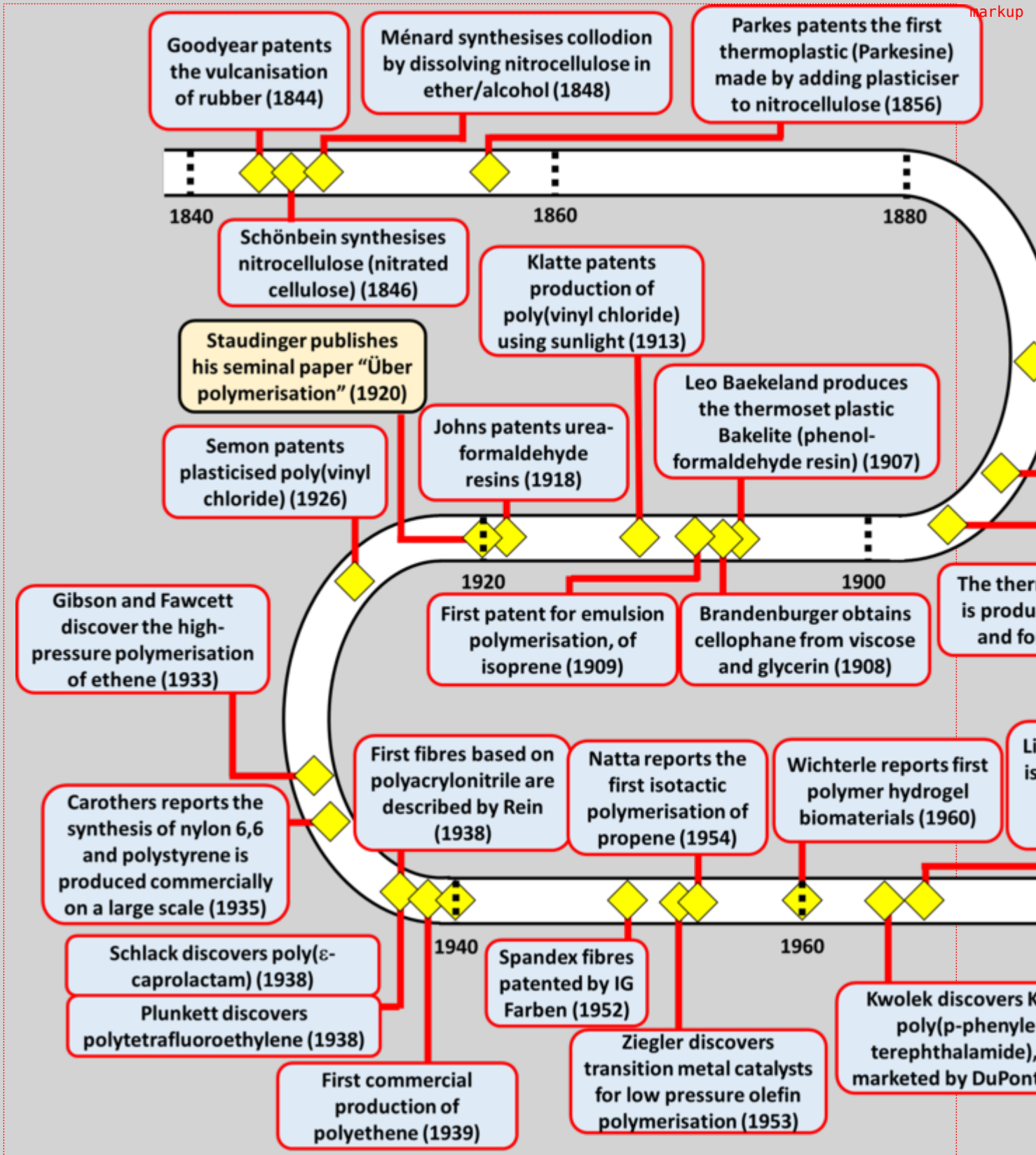
computer control markup

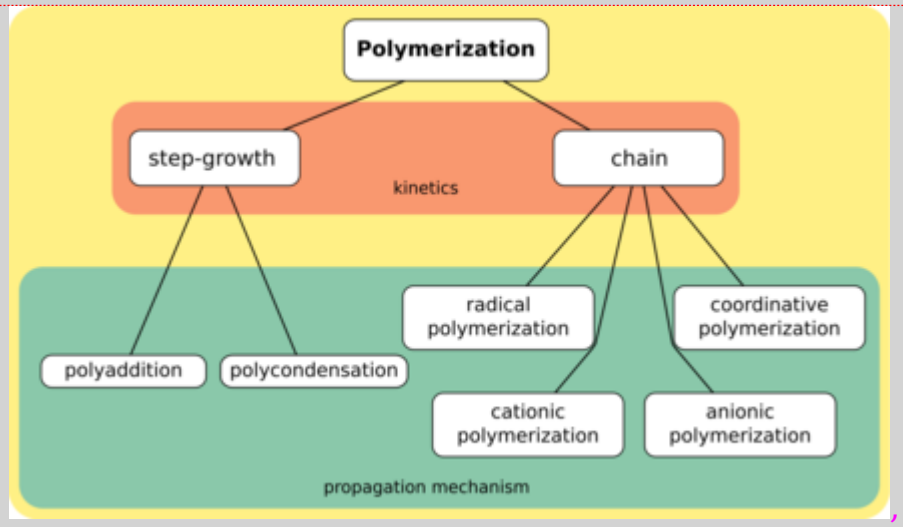


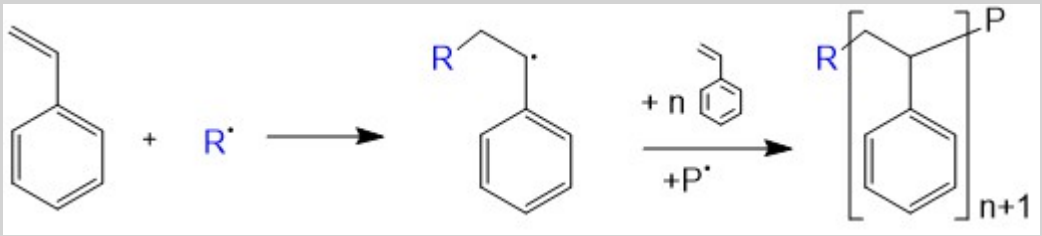


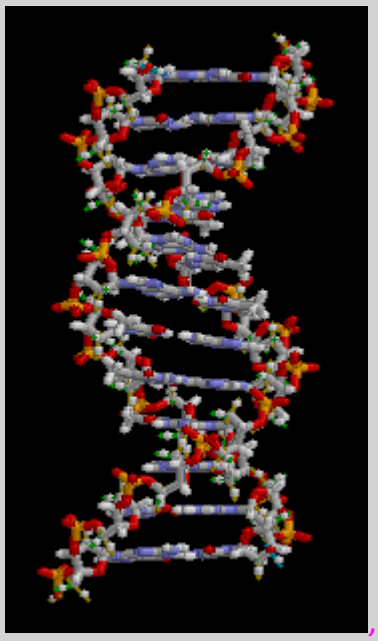


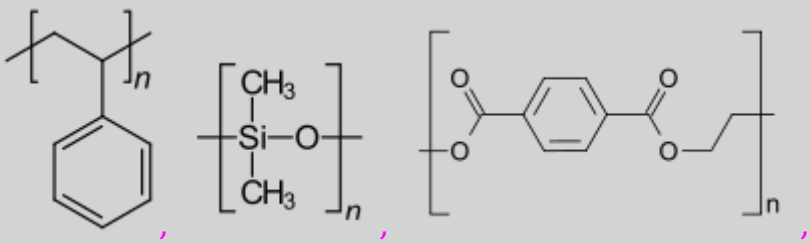
formal programming machine

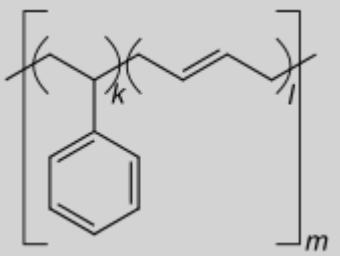

Goodyear patents the vulcanisation of rubber (1844)
Ménard synthesises collodion by dissolving nitrocellulose in ether/alcohol (1848)
Parkes patents the first thermoplastic (Parkesine) made by adding plasticiser to nitrocellulose (1856)
1840
1860
1880
Schönbein synthesises nitrocellulose (nitrated cellulose) (1846)
Klatte patents production of poly(vinyl chloride) using sunlight (1913)
Staudinger publishes his seminal paper "Über polymerisation" (1920)
Leo Baekeland produces the thermoset plastic Bakelite (phenol-formaldehyde resin) (1907)
Johns patents urea-formaldehyde resins (1918)
Semon patents plasticised poly(vinyl chloride) (1926)
1920
1900
Gibson and Fawcett discover the high-pressure polymerisation of ethene (1933)
First patent for emulsion polymerisation, of isoprene (1909)
Brandenburger obtains cellophane from viscose and glycerin (1908)
First fibres based on polyacrylonitrile are described by Rein (1938)
Natta reports the first isotactic polymerisation of propene (1954)
Wichterle reports first polymer hydrogel biomaterials (1960)
Carothers reports the synthesis of nylon 6,6 and polystyrene is produced commercially on a large scale (1935)
1940
1960
Schlack discovers poly(ε-caprolactam) (1938)
Plunkett discovers polytetrafluoroethylene (1938)
Spandex fibres patented by IG Farben (1952)
Ziegler discovers transition metal catalysts for low pressure olefin polymerisation (1953)
First commercial production of polyethene (1939)

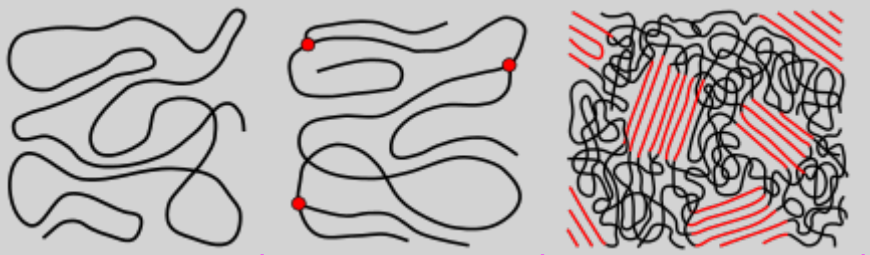


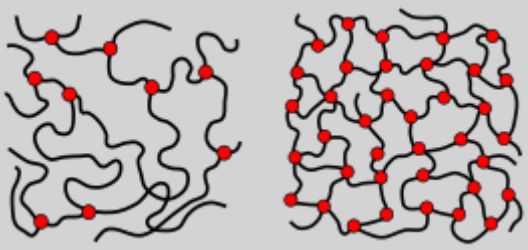


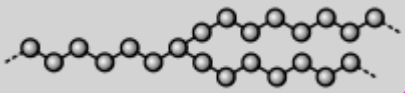






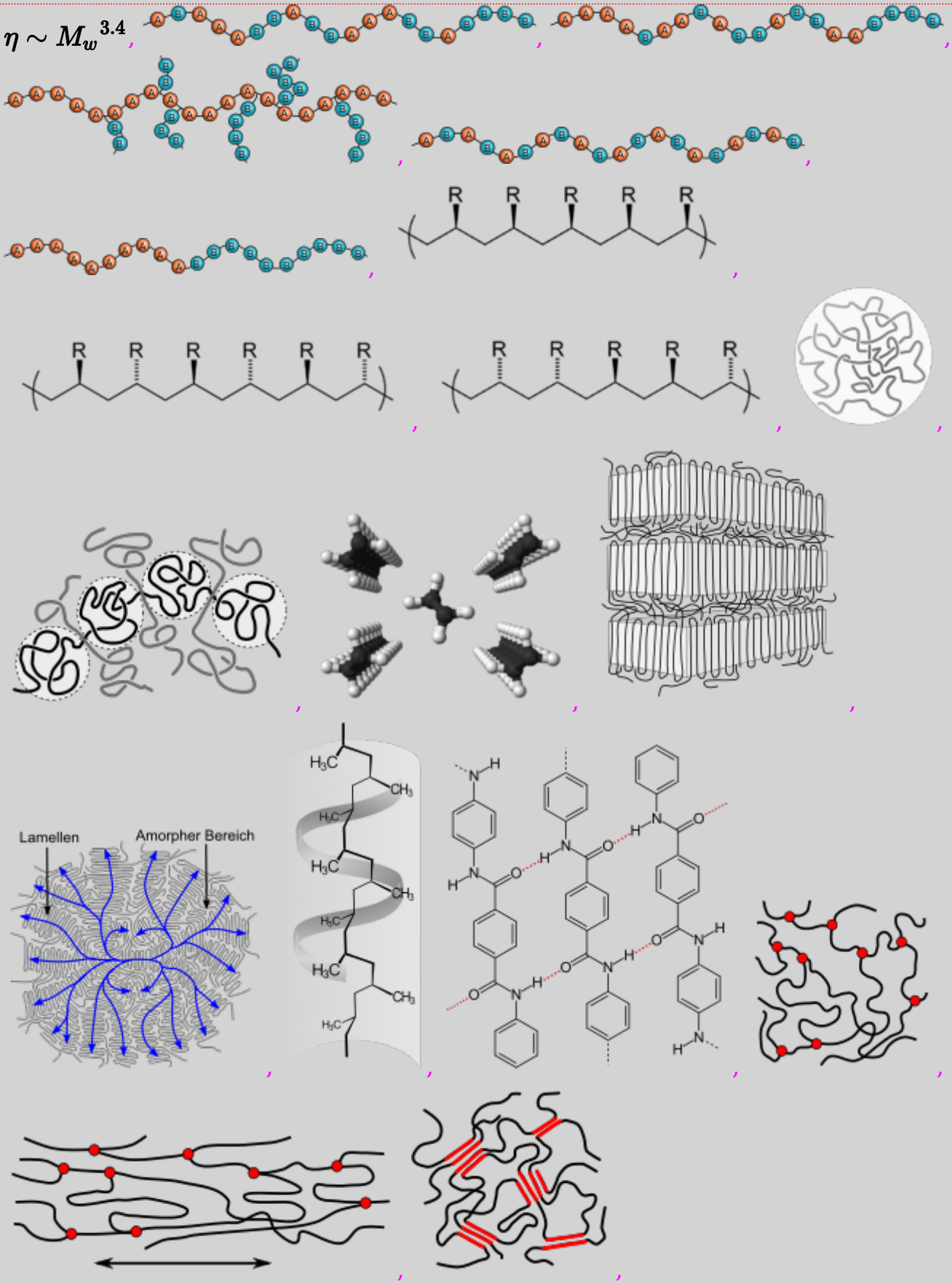


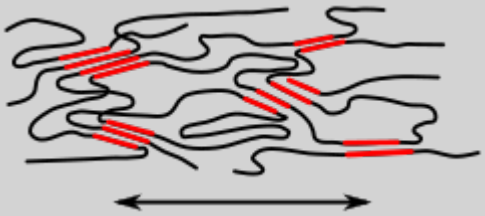


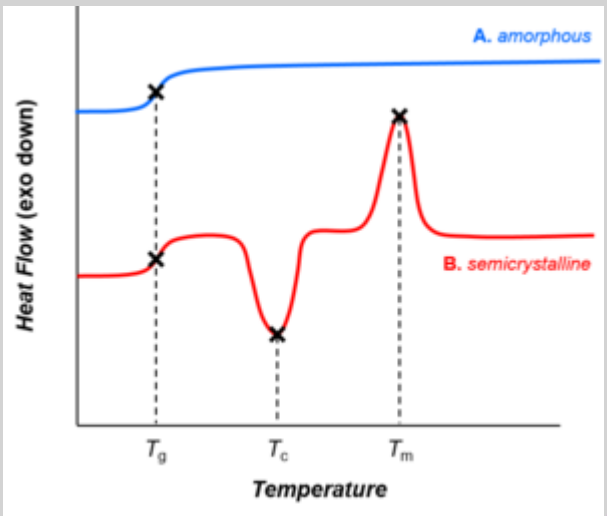


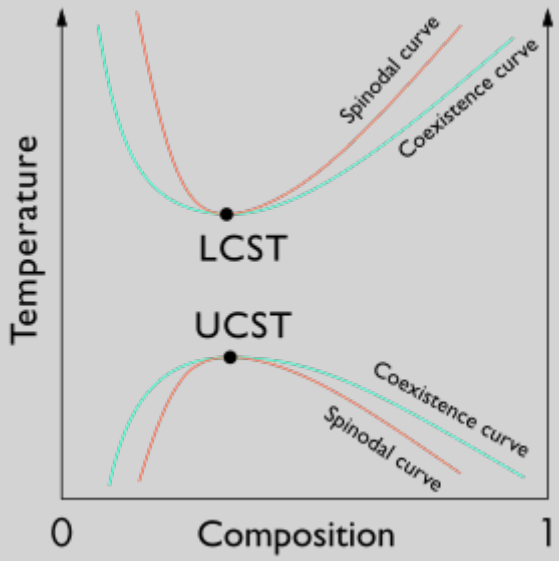
M_w, η, $\eta \sim {M_w}^1$,

$$\eta \sim M_w^{3.4}$$









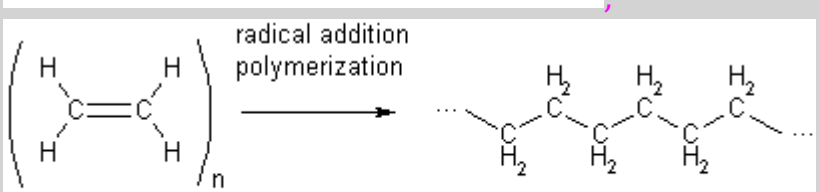


Fig 1: The polymerisation of ethene in to poly(ethene)