

Announcements

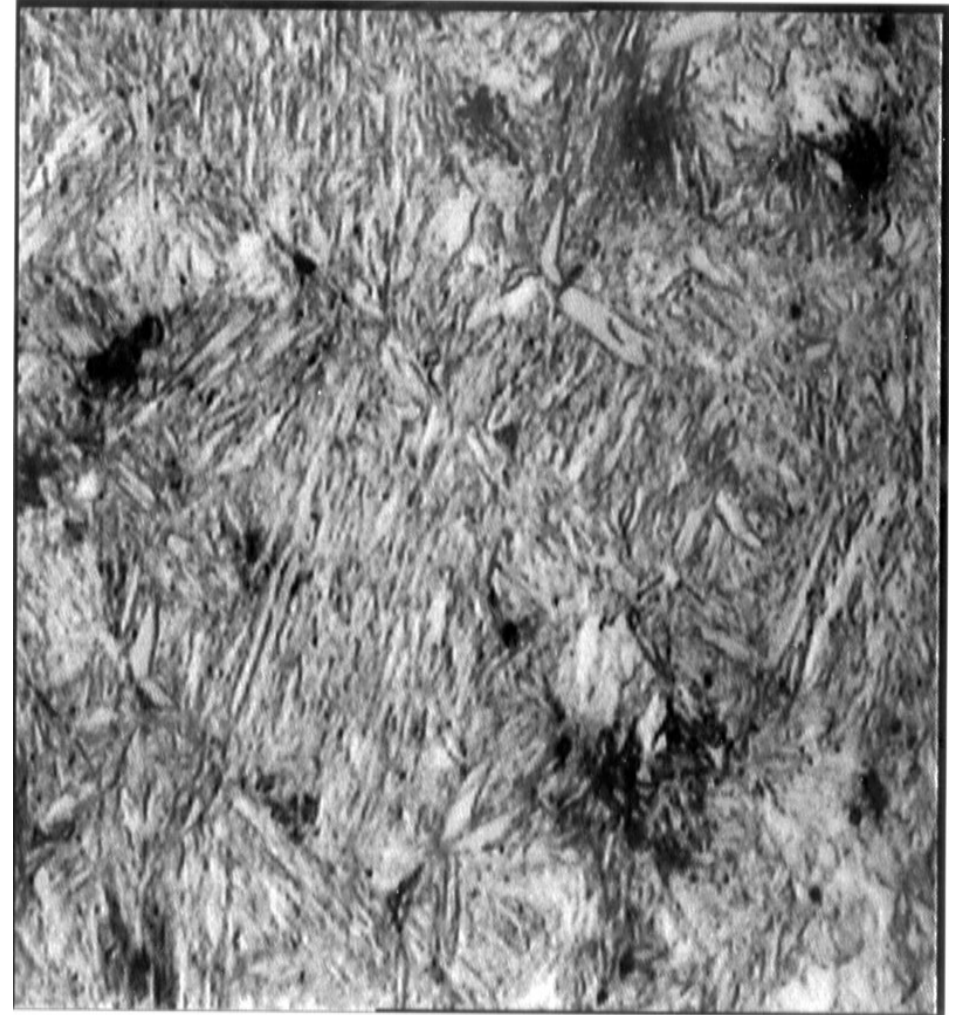
- Turn on the Clicker (the red LED comes on).
- Push “Join” button followed by “20” followed by the “Send” button (switches to flashing green LED if successful).
- Last exam 1 week from today.
- Will be putting up review material in the near future. Will send out e-mails as they become available.

Review

- Electrometallurgy (Cu & Al)
- Ore purification (smelting Cu & Fe, Al_2O_3 from bauxite)
- Explained physical properties of metals in terms of the electron sea model.
- Modification of metal properties: work hardening and dislocations/defects in the crystals.

Heat Treatment

Annealing and Quenching



Metal quenched (cooled quickly) in water.
Note small crystal domains.

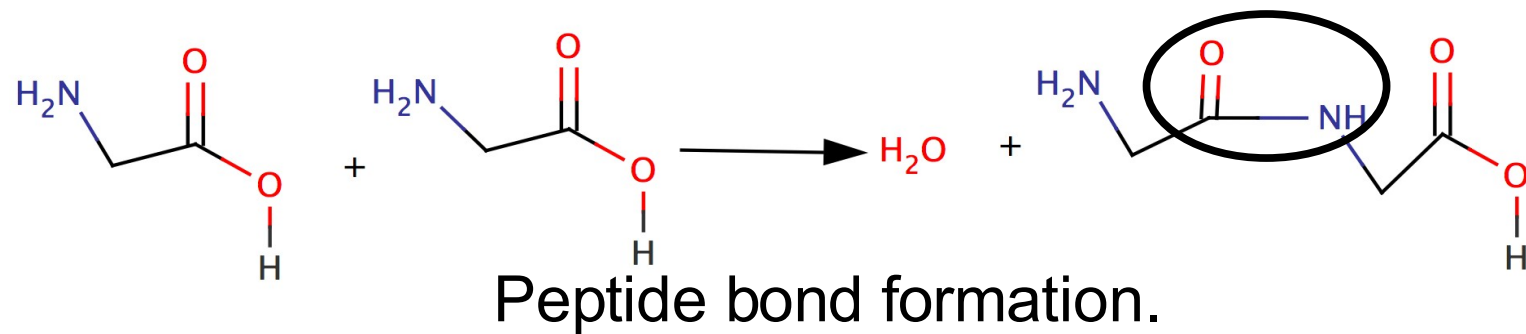
Slow cooling of metal (*J. STEM Ed.* Vol.
7, 2006, P. 64)

Interstitial Alloy

Gilbert Figure 18.9

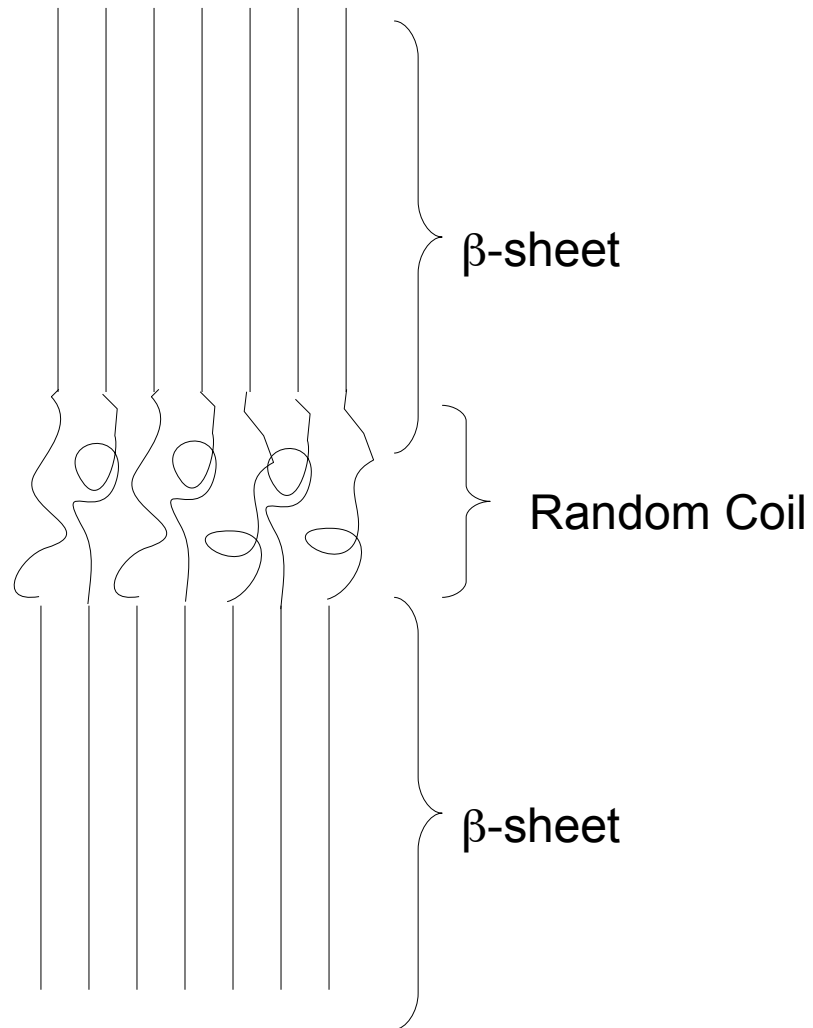
Cellulose and Starch

Gilbert Fig. 12.18



Silk

Chang Figure 22.10

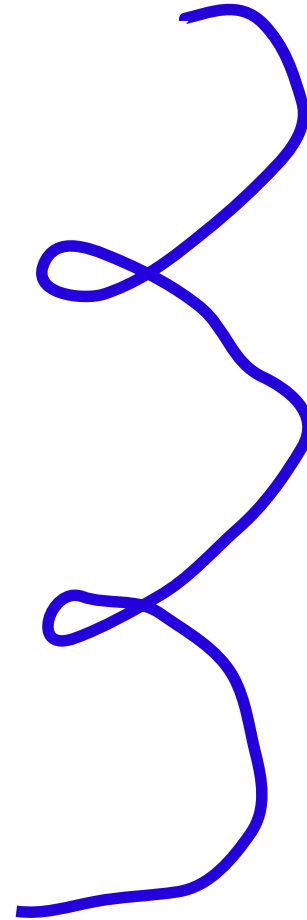


β -sheet regions provide strength.
Random coil provides a little stretch.

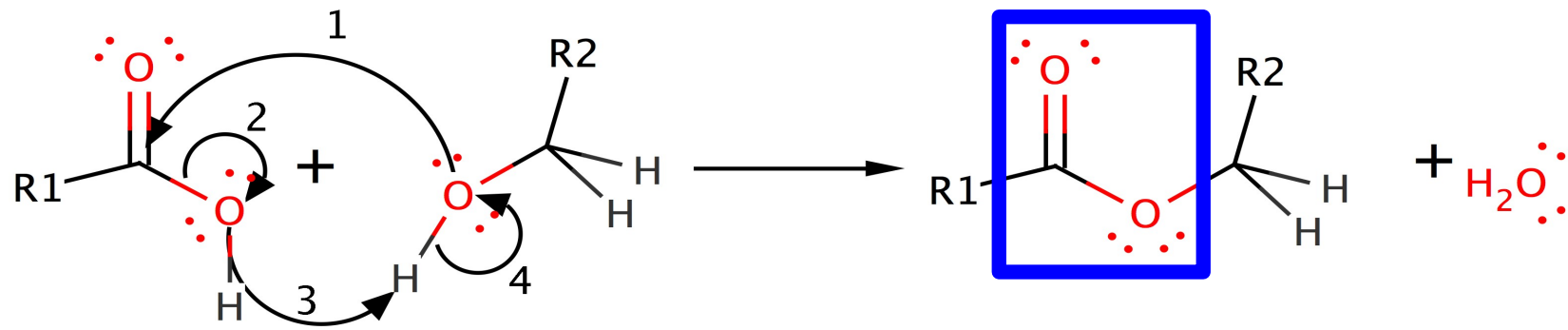
β -sheet held together by H-bonds
(nearly crystalline)

Wool

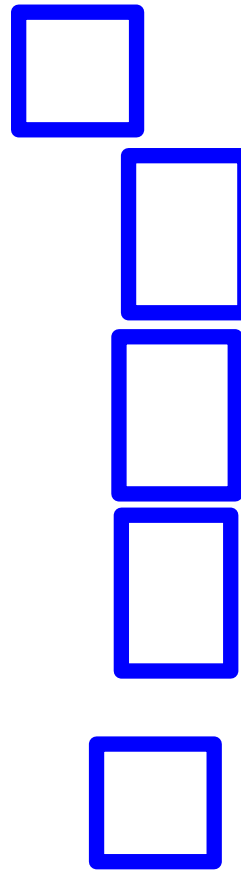
- α -helix held together by H-bonding from one loop to next.
- Not as rigid a structure as β -sheet.
- Can be stretched like a spring.
- Wool fibers are bundles of these helixes.

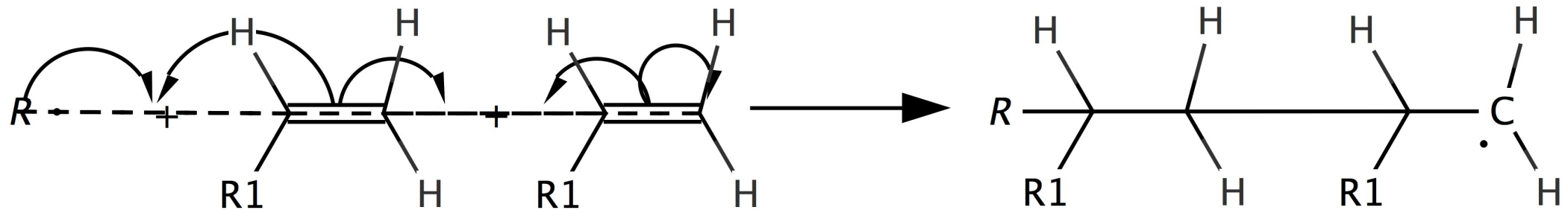


Chang fig. 22.9



- Condensation polymers release H_2O while forming.
- $\text{HO}-$ or $\text{H}_2\text{N}-$ can be the source of the linking atom and one of the hydrogens used to form the water.
- Look for the boxed linkages to recognize condensation polymers.





- Addition polymerization releases no by products.
- Radical (unpaired electron) propagates down the chain
- Look for polymers with no amide or ester linkages, just C–C bonds.

Chang Table 22.1