**Ch. 16 Notes: *Chemical Composition of Fibers***

🡪Fibers are \_\_\_\_\_\_\_\_\_\_\_\_: long \_\_\_\_\_\_\_\_\_\_\_\_ made of \_\_\_\_\_\_\_\_\_\_\_\_\_ molecules

**Natural Fibers**

1. W\_\_\_\_\_\_\_\_\_
   * + Polymer= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ chains (forming the \_\_\_\_\_\_\_\_\_\_\_\_ keratin)
     + Monomer= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (one of which is \_\_\_\_\_\_\_\_\_\_\_--cysteine contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
2. S\_\_\_\_\_\_\_\_\_
   * + Polymer= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
     + Monomer= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (but \_\_\_\_\_\_\_\_\_\_\_\_\_of a variety than wool)
3. C\_\_\_\_\_\_\_\_\_
   * + Polymer= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (plant)
     + Monomer= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. L\_\_\_\_\_\_\_\_\_
   * + Polymer= cellulose (\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plant)
       - * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ chains than cotton which makes it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
     + Monomer= \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Man-made Fibers**

1. Rayon
   * \_\_\_\_\_\_\_\_\_\_\_\_\_ fiber, then chemically altered, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ like \_\_\_\_\_\_\_\_
2. Acetate
   * Made from a between \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Synthetic Fibers**

1. Polyamides—linked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ group
   * Example:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and more chemically \_\_\_\_\_\_\_\_\_\_ than \_\_\_\_\_\_\_\_\_\_\_ fibers
2. Polyesters—lined by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ group
   * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ linkage than polyamides
   * Linkage can be linear (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) or cross-linked (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
3. Spandex—structurally similar to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * Made of segments of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ connected to long segments of polyesters
   * Resulting spandex can stretch up to \_\_\_\_\_\_\_\_ and recover \_\_\_\_\_\_\_\_\_\_ strength

Images from: http://www.leydenglenlamb.com/photos.htm; http://entomology.unl.edu/images/silkworm/silkworm1.jpg; http://www.texaspolicecentral.com/Texas-Patriotism.php; http://www.flowers-cs.com/flax.html; http://www.imageenvision.com/collection/fitness.html; http://www.fingerpainrelief.com/rubber-band-therapy-for-finger-pain