Hints

$$\sigma_{local} = \left(1 + 2\sqrt{\frac{a}{r}}\right)\sigma_0$$

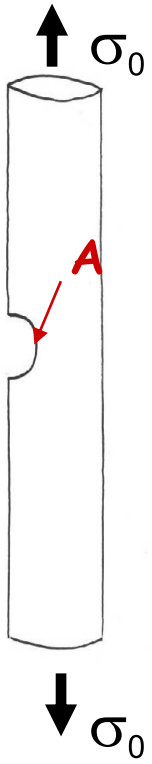
$$\sigma_{th} = \frac{E}{10}$$

$$\sigma_{local} = \sigma_{th}$$

Case 1: a = r = 1 micron

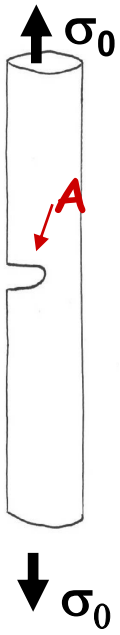
Case 2: a = 1 micron, and r = 20 Å

$$1\text{Å} = 10^{-10}m = 10^{-4}\mu m$$



$$\sigma_{local1} = ?$$

$$\sigma_{local2} = ?$$



$$\sigma_{local} = \sigma_{th} = \frac{E}{10}$$

$$\sigma_{o1} = \frac{E}{30}$$

$$\sigma_{o2} = \frac{E}{460}$$