# Homework Quiz #4A
## solution outline

Calculate the energy required to break the weakest bond in difluoromethane ($CH_2F_2$).
Bond Energies (kJ/mol):   H–H  435;   F–F  160;   C–C  350.

use the Pauling formula to calculate bond energies

consider C–H

$$E_{C-H} = \sqrt{E_{C-C} \times E_{H-H}} + 96.3\,(\chi_C - \chi_H)^2 = \sqrt{350 \times 435} + 96.3\,(2.55 - 2.20)^2 = 402\,kJ/mol$$

consider C–F

$$E_{C-F} = \sqrt{E_{C-C} \times E_{F-F}} + 96.3\,(\chi_C - \chi_F)^2 = \sqrt{350 \times 160} + 96.3\,(2.55 - 3.98)^2 = 433\,kJ/mol$$

C–H is the weaker bond. It takes 402 kJ/mol to break it.