19F-CHEM14A-2 Quiz 1

VIBHA GURUNATHAN

TOTAL POINTS

5/5

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QUESTION 1
1 Miles Per gallon 2/2

√ + 0.5 pts Correct

  √ + 0.5 pts Match Energy Units (J to kJ or vice versa)

√ + 0.5 pts Efficiency Conversion

√ + 0.5 pts Use J/mile term to convert to miles/gallon

    + 0 pts Incorrect
QUESTION 2
Potassium Photoelectric Effect 2 pts
2.1 Energy absorbed by the electron in eV 1
/ 1
    + 0 pts Incorrect
   + 0.5 pts h(1.2E15) = 7.9512E-19J

√ + 0.5 pts E=hv

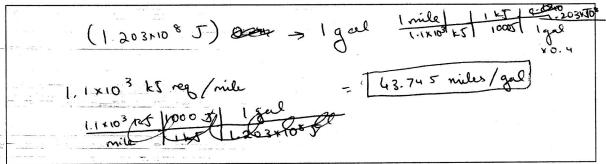
  √ + 0.5 pts h(1.3E15)=8.6138E-19J
2.2 Kinetic Energy 1/1
    + 0 pts Incorrect or no work
  \sqrt{+0.5} pts KE=hv-workf.
    + 0.5 pts (8.0-6.95)E-19= 1E-19J
  \sqrt{+0.5} pts (8.6-6.95)E-19= 1.6E-19J
QUESTION 3
3 Electrons and neutrons etc 1/1
  √ + 0.75 pts Different number of neutrons (quiz a)
  Different number of electrons (quiz b)

√ + 0.25 pts Different atomic mass (quiz a)

  Different charge (quiz b)
    + 0 pts Incorrect
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1) You wish to calculate the theoretical miles per gallon of your car. You know that one gallon of gasoline contains 1.203×10^8 joules. However, your car's engine can only make use of 40.% of this energy. Also, your car requires 1.1×10^3 kilojoules to travel one mile. How many miles per gallon do you expect from your car?



- 2) Potassium has a work function of 6.9545×10^{-19} joules. A photon with frequency 1.3×10^{15} Hz strikes a sample of potassium.
 - —A) How much energy is contained in the photon? Express your answer in joules.

$$E = h \nu = (1.3 \times 10^{15} \, s^{-1})(h)$$

$$= [8.614 \times 10^{-19}]$$

B) How much kinetic energy does an emitted electron have in this case (in joules)?

3) Carbon has three natural isotopes: Carbon-12, Carbon-13, and Carbon-14. What is the difference between these three isotopes?

These three isotopes all have different numbers of neutrons. a

(-12 has 6, C-13 has 7, and C-14 has 8. They also have

different masses (12 g, 13 g, \$ 14 g respectively) B

motor

occur in ranging frequencies w/ C-12 being the most