“The History of Atomic Chemistry: Crash Course Chemistry #37”

Please complete this worksheet while watching “The History of Atomic Chemistry” video.

1. ‘A TOMOS
   1. Means:
2. After early scientists decided that things like iron were made of iron atoms and cheese was made with cheese atoms, how many more years passed before further developments were made?
3. Antoine Lavoisier proposed the Law of conservation of mass which states: even if matter changes state or form, its mass stays the same
4. Why do atoms behave the way they do?
   1. Lead to the investigation of atomic structure
      1. What is a discharge tube?
         1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
            1. What is the name for the ray that produces the light by a negative electrode?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ray

\_\_\_\_\_\_\_\_\_\_\_\_\_ charge

* 1. Joseph John (J.J.) Thompson

Draw & label J.J. Thompson’s plum pudding model:

* + 1. Measured how much heat was emitted by the cathode rays generated and how much they could be bent by magnets, etc. he was able to estimate the mass of the rays. This mass was about 1,000 times lighter than hydrogen.
       1. What did he conclude?
          1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
          2. Very light, very small negatively charged particles

What do we call them?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How are the negatively charged electorns arranged in the atom?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. Rutherford

Draw Rutherford’s gold particle experiment reality:

* + 1. Designed an experiment using an extremely thin sheet of gold foil which he bombarded by alpha particles
       1. What did he expect the charged particles to do to the foil?
          1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
       2. What actually happened?
          1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* + - * 1. The only explanation for this is:

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What did he call this area?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. Niels Bohr

Draw & label Bohr’s planetary model:

* + 1. Who did Bohr travel to England to study with?
       1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
       2. Who were the German physicts’ whose mathematical models influenced Bohr?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* + 1. What experiment did Bohr analyze?
       1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    2. What is the name of Bohr’s model?
       1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
          1. It represents the electrons in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ around a small, central \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
          2. What was the problem with Bohr’s model?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. Werner Karl Heisenberg
     1. It is impossible to know with certainty both the momentum and exact position of the electron.
        1. Quantum Theory
           1. Proposes: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* + - * 1. What is the name for the regions where an electron is likely to be found?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + - * 1. Quantum theory is based on what?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How are quantum-style atoms drawn as?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What does the intensity of color of the cloud represent?

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