Chemistry 4000
Introduction to Inorganic Chemistry: The Different Perspectives of Bonding

Assignment #1

The January 29, 2024 edition of Chemical & Engineering News published the article "Divining the mysteries of the atomic nucleus", which chronicles recent studies to elucidate more insight into the composition of the nuclear to answer origin of life questions. Read the article and write a short commentary in which you respond to the questions below (Times New Roman, 12 pt, single spaced). **Your writing must be in composition format and not as individual answers to each question.** For this assignment use ACS style referencing to provide the references that you used to answer the questions and please include the references in text. Write your essay in either English or Spanish and submit your assignment as a pdf file to my e-mail address: arthur.tinoco@upr.edu. A friendly reminder that you have to format the name of your pdf file using the guidelines that I specified during the first day of lecture. The due date is **February 8th** by 9 am.

1. According to the IUPAC, how long must an element hold together for it to be considered as an element that exists?

2. How do scientists prepare rare isotopes that are relatively neutron rich to gain insight into neutron stars?

3. ^{28}O is a representation of a neutron-rich rare isotope. How many protons and neutrons is it composed of? How was ^{28}O prepared? Write a chemical equation to demonstrate the nuclear chemistry involved. How stable is this isotope and what is its immediate decay product?

4. ^{9}N is a representation of a proton-rich rare isotope. How many protons and neutrons is it composed of? Write a chemical equation for its decay.