

Daily Problem 9

Name: _____

Score: _____

Atomic and Ionic Radius II

Rank the following atoms from greatest to lowest radius.

A. Fe

B. Ru

C. Fe^{2+}

D. Rh^+

E. Ru^{4+}

F. Tc^-

Greatest 1 E 2 F 3 B 4 D 5 A 6 C Least

Explain your reasoning below. Looking up the radii does not constitute an explanation. Use sentences and proper grammar to back up your claim.

- $\text{Fe}^{2+} < \text{Fe}$ since removing e^- reduces shielding.
- $\text{Fe} < \text{Ru}$ since Ru has an extra shell of e^- .
- Note that Rh, Ru and Tc have similar sizes
 $\therefore \text{Rh}^+ < \text{Ru} < \text{Tc}$
- $\text{Ru} \ll \text{Ru}^{4+}$

So, only question is which is larger, Fe or Rh^+ ?
You could argue either way (so I'll accept either).
For my answer, I choose $\text{Fe} < \text{Rh}^+$ because the added shell has lots of extra e^- for screening.

Circle the response that best describes your confidence in your answer above.

(Basically Guessed) 1 2 3 4 5 (Positive you get it)