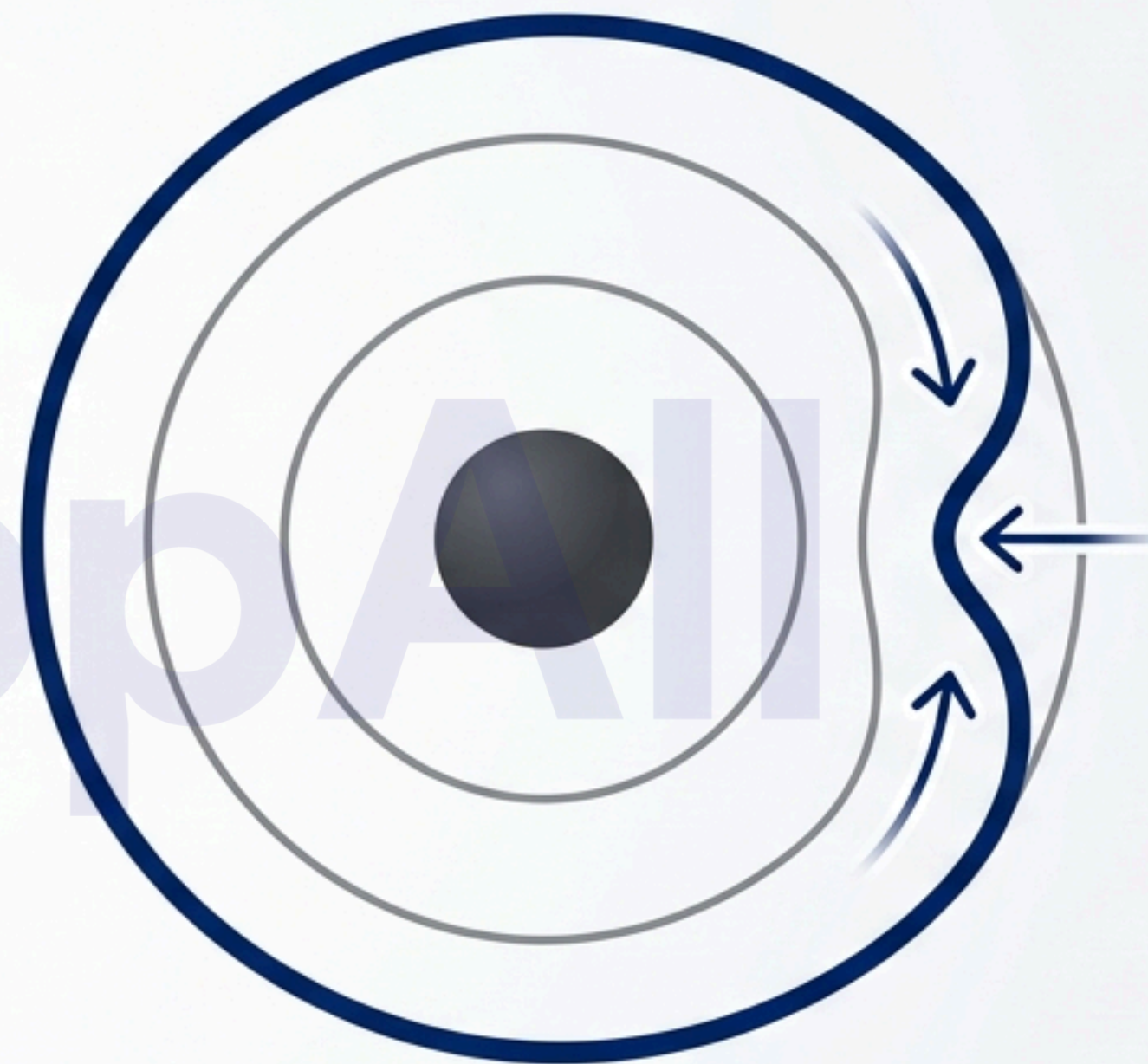


UNIT 4 • d- AND f-BLOCK ELEMENTS

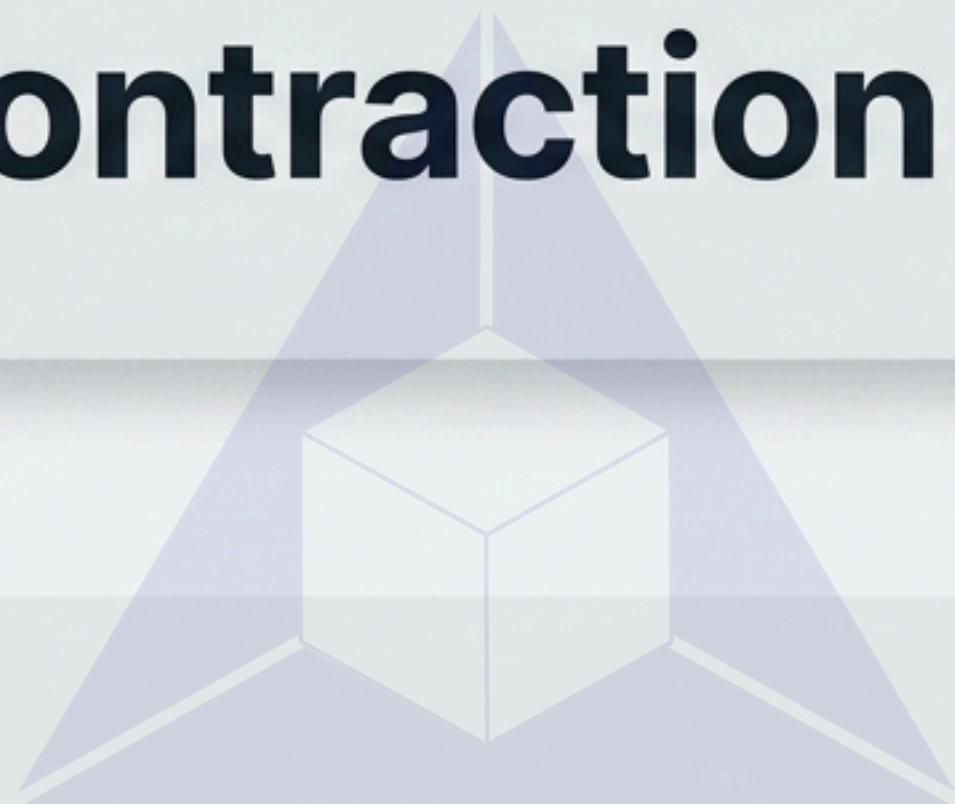
Ionic Sizes of the Actinoids

Understanding the Actinoid Contraction and 5f Shielding Dynamics



Actinoid Contraction

The gradual decrease in atomic and ionic sizes across the actinoid series.



TopAll

Driven by the **poor shielding** of increasing nuclear charge by inner 5f electrons.



You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

Practice Now



At prep.topall.app

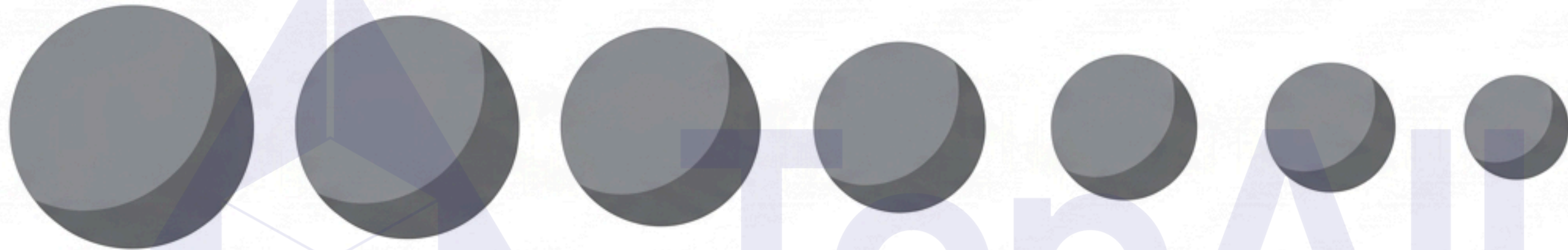
Key Highlights

- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter

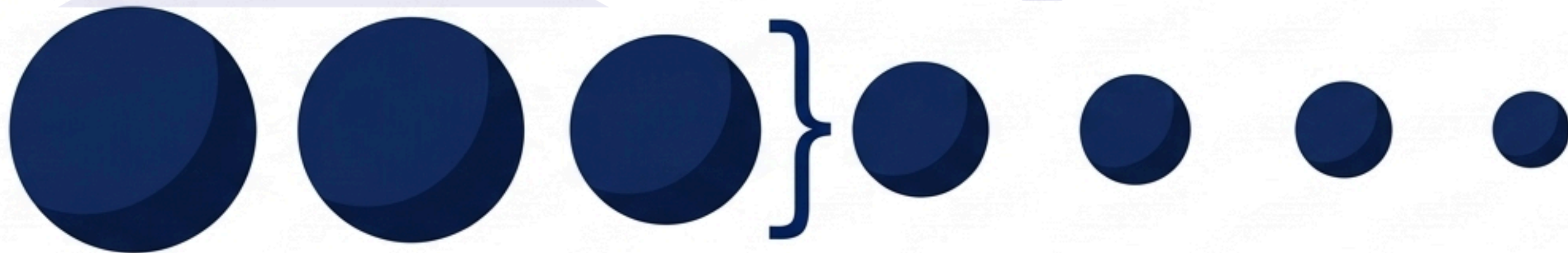


Comparing the Contractions

Lanthanoid Contraction (4f)

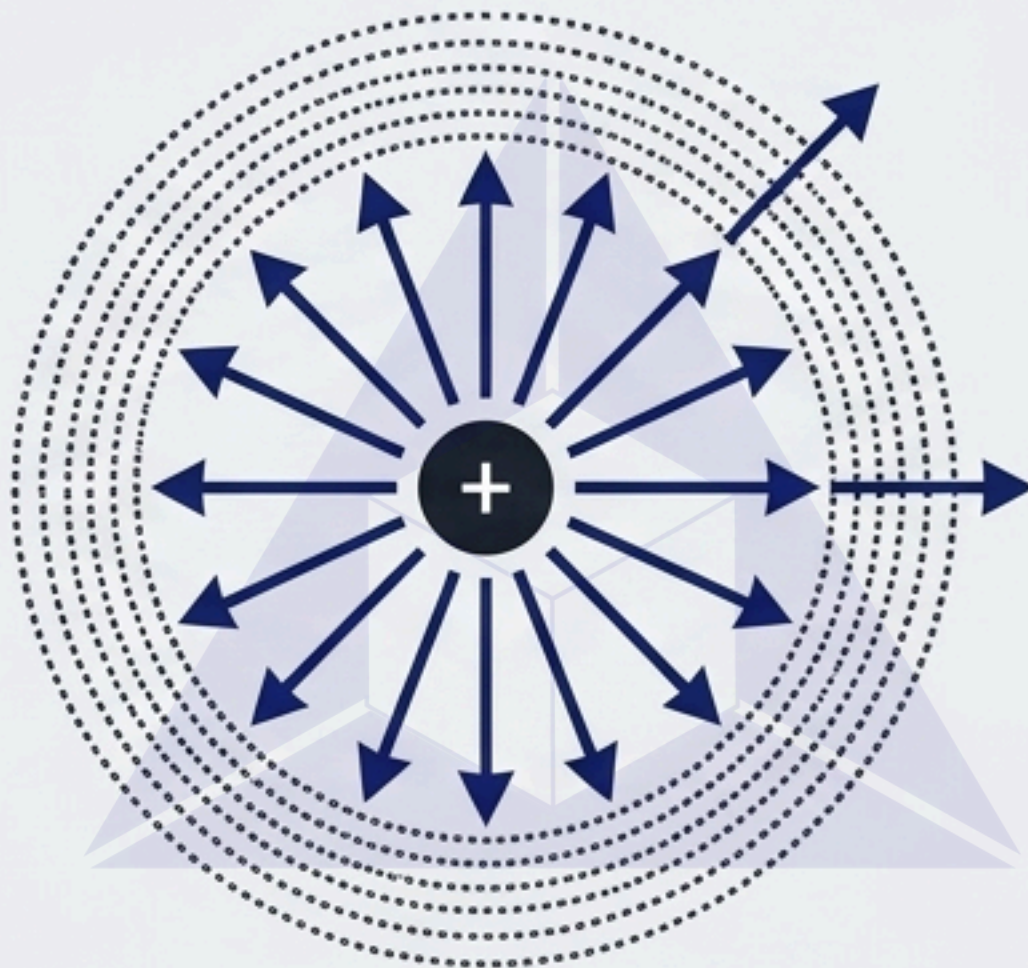


Actinoid Contraction (5f)



Larger step-by-step decrease

The Shielding Barrier: 4f vs 5f



4f electrons provide moderate shielding.



5f electrons are less buried and provide **poor shielding**.

Fact: 5f electrons shield each other less effectively than 4f electrons, causing a stronger net inward pull.



Watch for this!

Examiners often test the **comparison between the two inner transition series.**

The Actinoid Contraction is GREATER from element to element than the Lanthanoid Contraction.

Because the $5f$ shielding effect is even weaker than the $4f$ shielding effect.

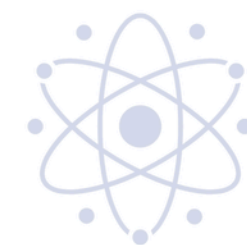
Key Takeaways

- **Actinoid Contraction:** There is a gradual decrease in ionic and atomic sizes across the series due to the imperfect shielding of one 5f electron by another.
- **The Magnitude Difference:** The contraction is **greater** from element to element in actinoids than in lanthanoids because 5f electrons shield each other less effectively than 4f electrons.



You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

Practice Now



At prep.topall.app

Key Highlights

- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter

