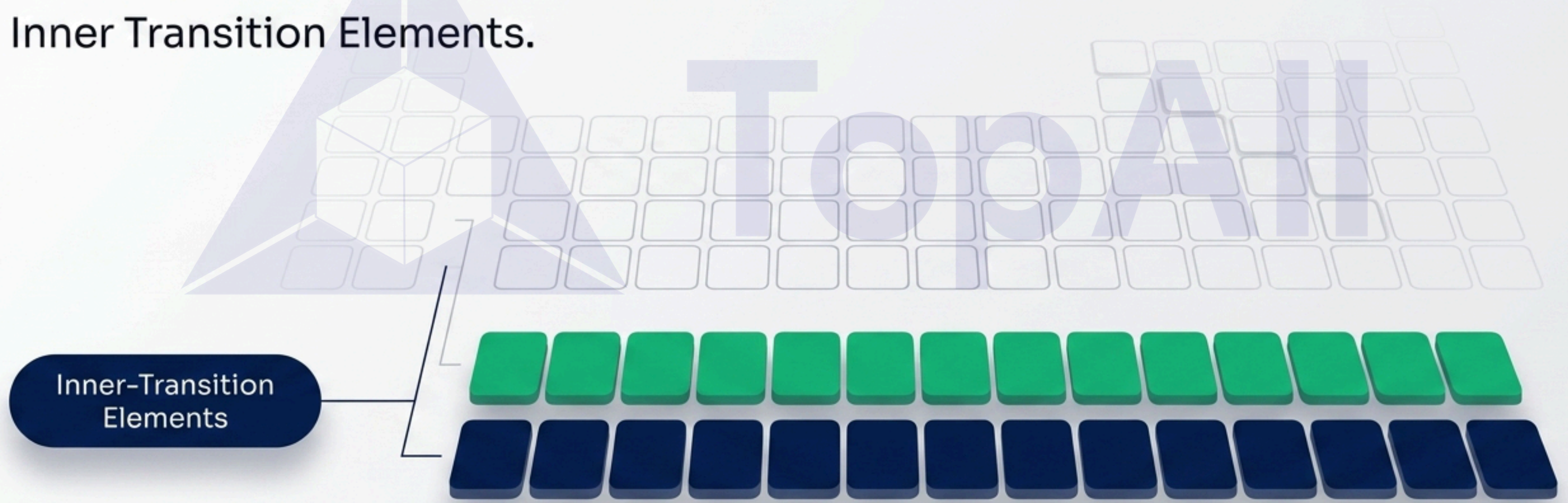
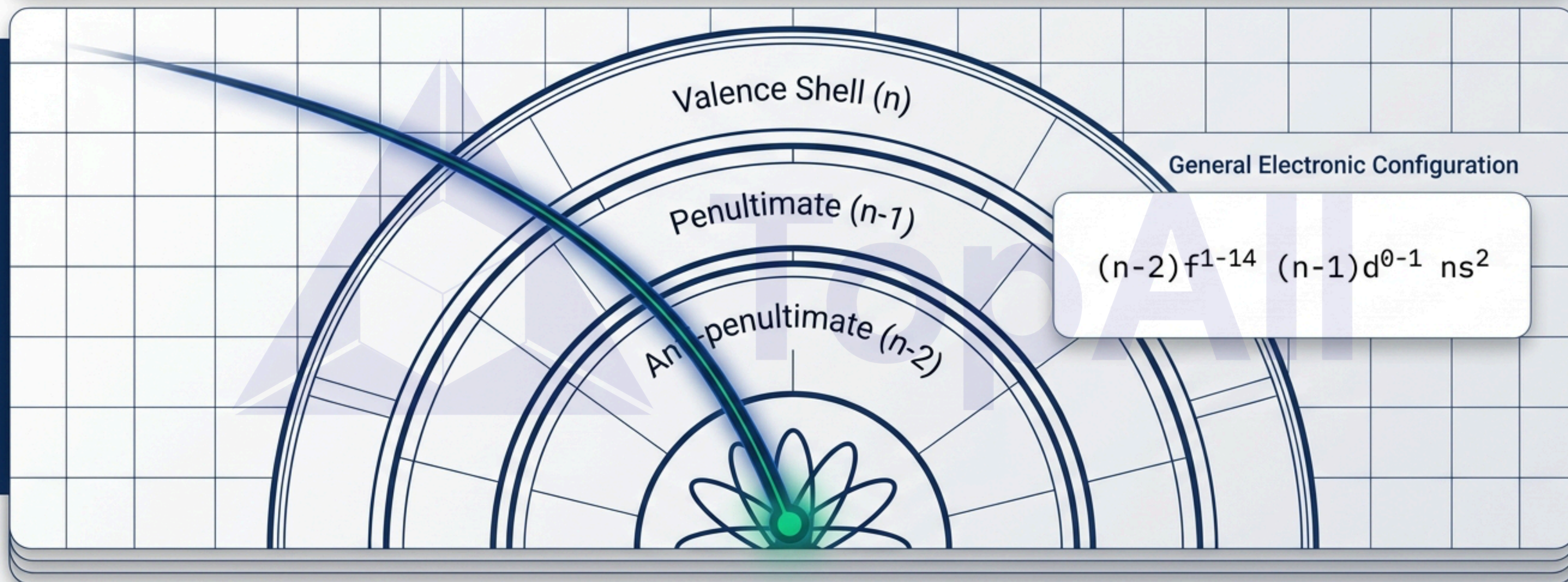


The Hidden Rows of the Periodic Table

An architectural breakdown of the Inner Transition Elements.



The Quantum Engine: Buried Orbitals



The last electron enters an inner f orbital, buried deep beneath the outer valence shell.

Stratum 1: The Lanthanoids

$Z = 58 - 71$

Period 6

4f Orbital Filling

Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
----	----	----	----	----	----	----	----	----	----	----	----	----	----

1

All elements are metals.

2

Serve as an inner-transition series bridging the s and d blocks.

3

Highly consistent properties across the entire row.

Stratum 2: The Actinoids

Alert: Radioactive

$Z = 90 - 103$

Period 7

5f Orbital Filling

Th

Pa

U

Np

Pu

Am

Cm

Bk

Cf

Es

Fm

Md

No

Lr

All elements are
radioactive metals.

Chemistry is significantly
more complicated than
Lanthanoids.

Exhibit a remarkably large
number of possible
oxidation states.



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

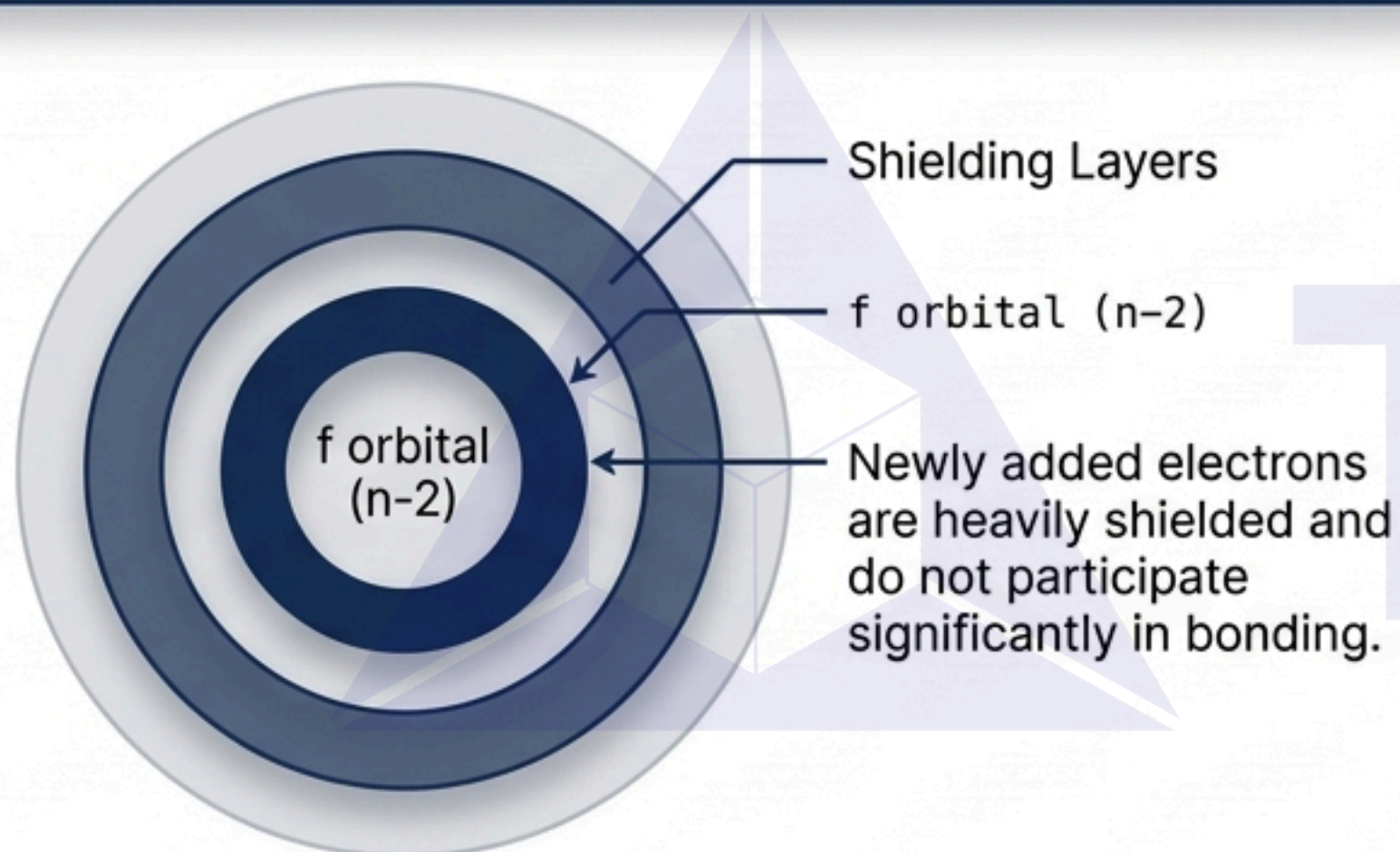
Key Highlights

- » 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

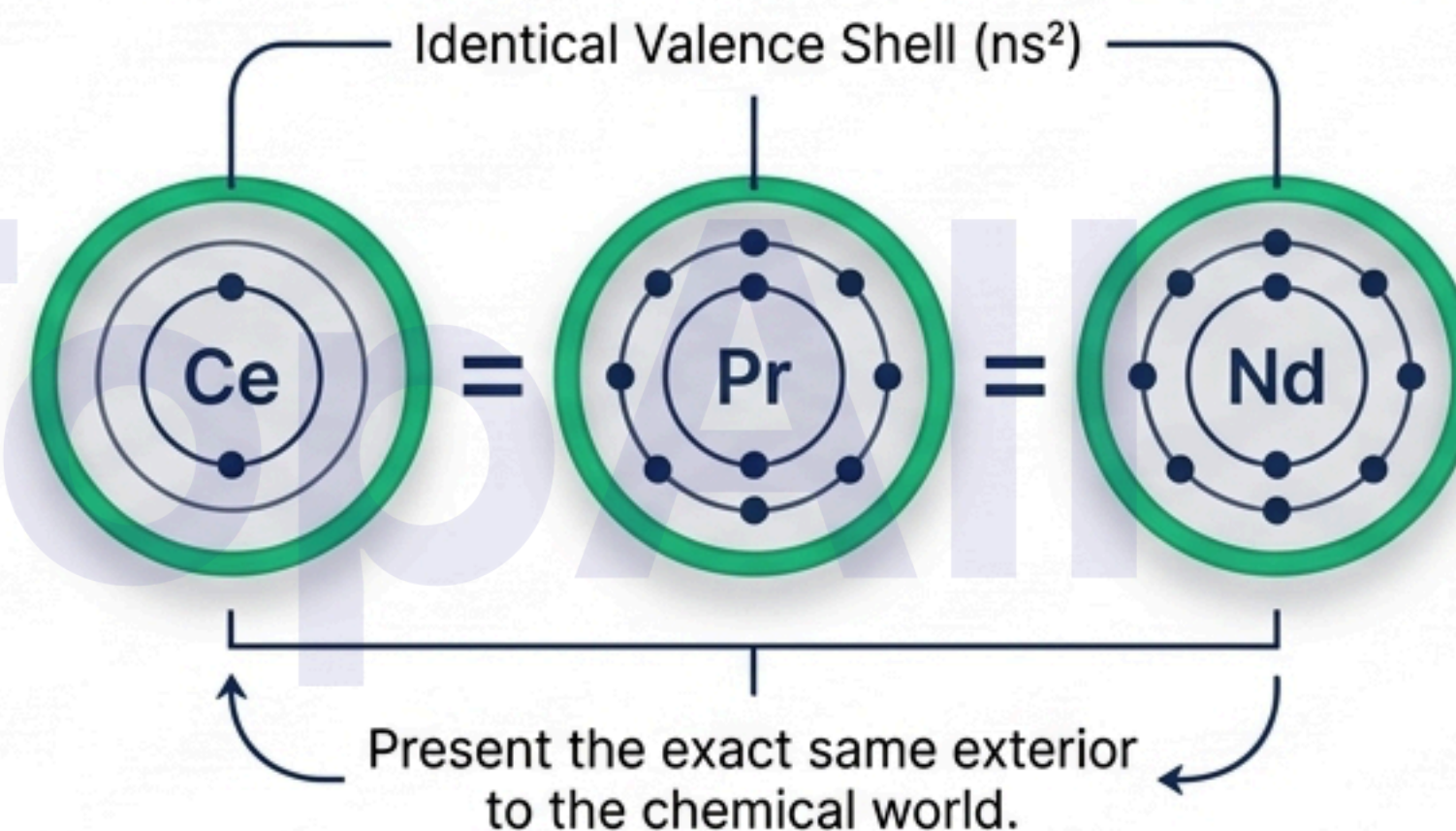


The 'Twins' Effect: Horizontal Similarity

The Cause: Shielded Orbitals



The Effect: Identical Outer Valence



Because added electrons are buried in the (n-2) shell, the outer valence shell remains largely identical across the series, resulting in nearly identical chemical behaviors among horizontal neighbors.

The Volatile Frontier

The Transuranium Elements ($Z > 92$)

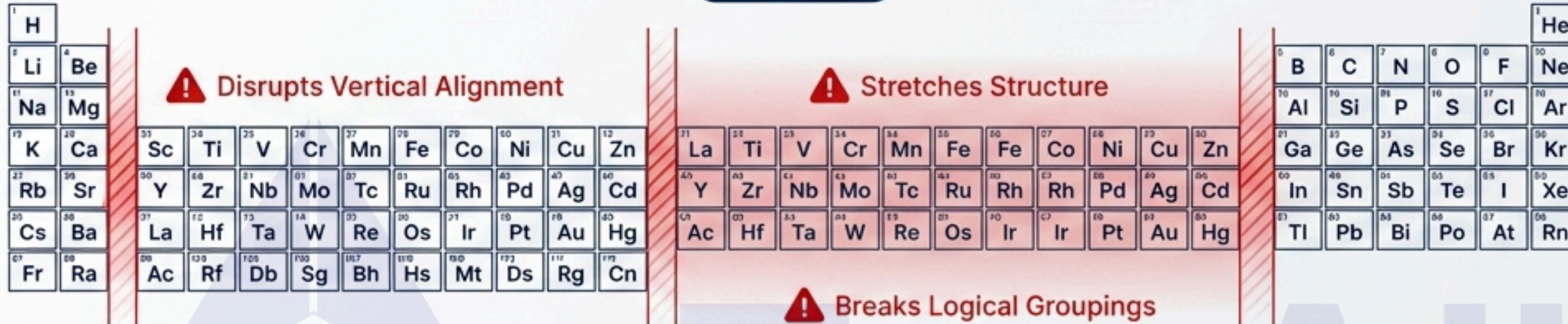
Uranium ($Z = 92$)

- Last naturally occurring heavy anchor

1. Entirely man-made via nuclear reactions.
2. Highly unstable and radioactive.
3. Many exist only in nanogram quantities or less.
4. Chemistry is not fully studied due to fractions-of-a-second lifespans.

Why Are They Placed Separately?

The Problem



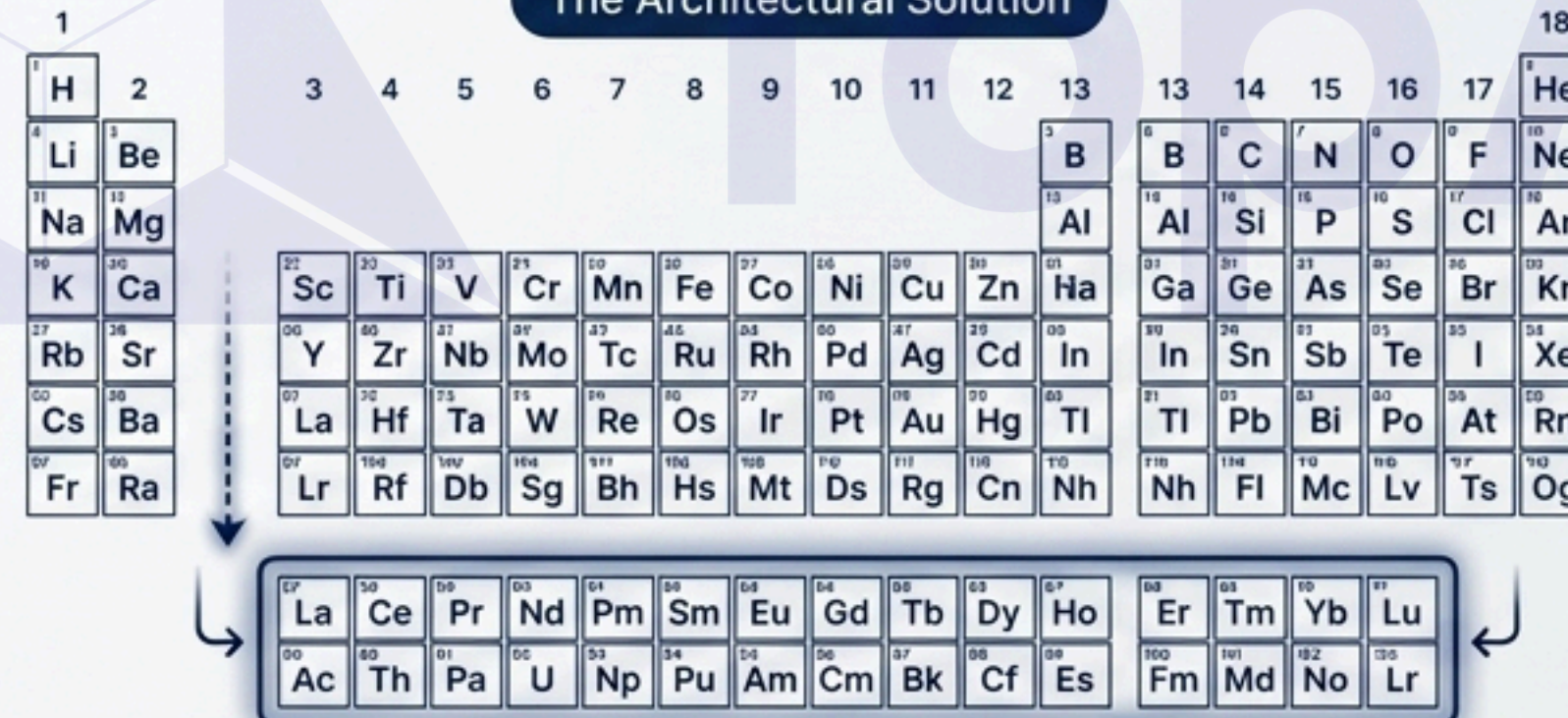
! Disrupts Vertical Alignment

! Stretches Structure

! Breaks Logical Groupings

The Architectural Solution

The Architectural Solution



1	2	3	4	5	6	7	8	9	10	11	12	13	13	14	15	16	17	18
H												B	B	C	N	O	F	He
Li	Be											Al	Al	Si	P	S	Cl	Ar
Na	Mg											Ga	Ge	As	Se	Br	Kr	
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Hg	In	Sn	Sb	Te	I	Xe
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	Hg	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Nh	Fl	Mc	Lv	Ts	Og

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Extracting the inner-transition elements preserves the structural integrity of the main table, ensuring elements with similar valence properties remain aligned in single, predictable vertical columns.



You've Learned the Theory.

Now Let's Test It.

Reading notes gets you knowledge.

Practicing MCQs gets you marks.

That's exactly what TopAll Pro is built for.

Try TopAll Pro Now

What TopAll Pro Does Differently

-  **Stuck? Snap it. Solve it. — Doubts AI**
Photo → step-by-step solution in seconds, 24/7
-  **Your AI Coach finds your blind spots**
Concept-level weakness detection — not just chapter-level
-  **4.5 Lakh+ questions. Never run out.**
13× more content than any other prep app in India
-  **Build your own test in 60 seconds**
Pick a chapter, set difficulty — AI does the rest instantly.
-  **AI Recommendation that helps you improve**
AI Recommendation Analysis your Tests and tell you where you need to improve.



Practice the moment you finish studying
Jump in while the concept is still fresh in your head

4.5L+
MCQs

1.5L+
Students

AI Powered
In-Depth Analysis