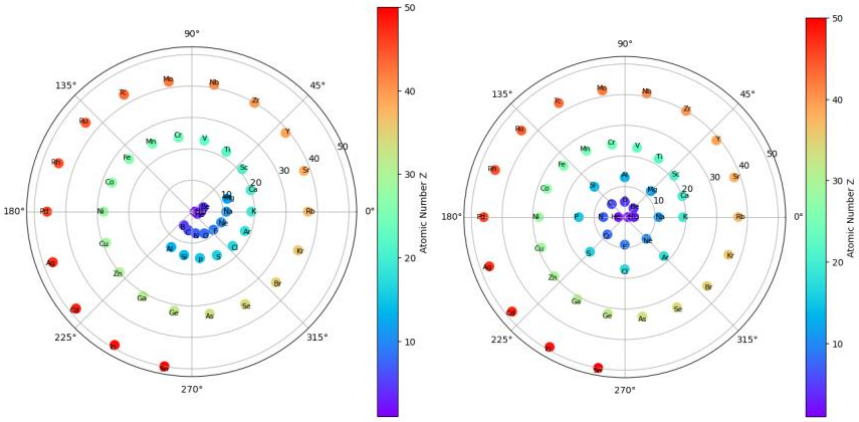

Fig R1: (Left) Fixed 18-sector mapping: all elements are aligned by group, so elements in the same vertical group are placed close together, highlighting chemical similarity. (Right) Variable mapping (2, 8, 8, 18…): elements are distributed according to the actual period lengths, making the sequence along each row appear more continuous.

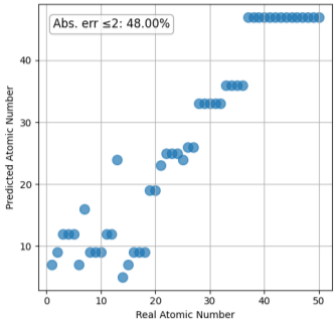

Fig R2 Simulation results showing predicted vs. real atomic numbers.

Why does shrinking hurt? Because it compresses high-Z elements onto smaller circles, making groups within the same period much harder to separate (See Fig. R3).

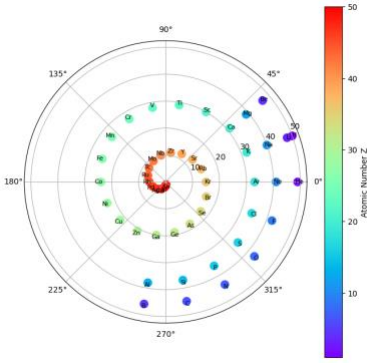

Fig R3. 2D projection of the 3D spiral representation when the spiral radius is forced to shrink with increasing atomic number