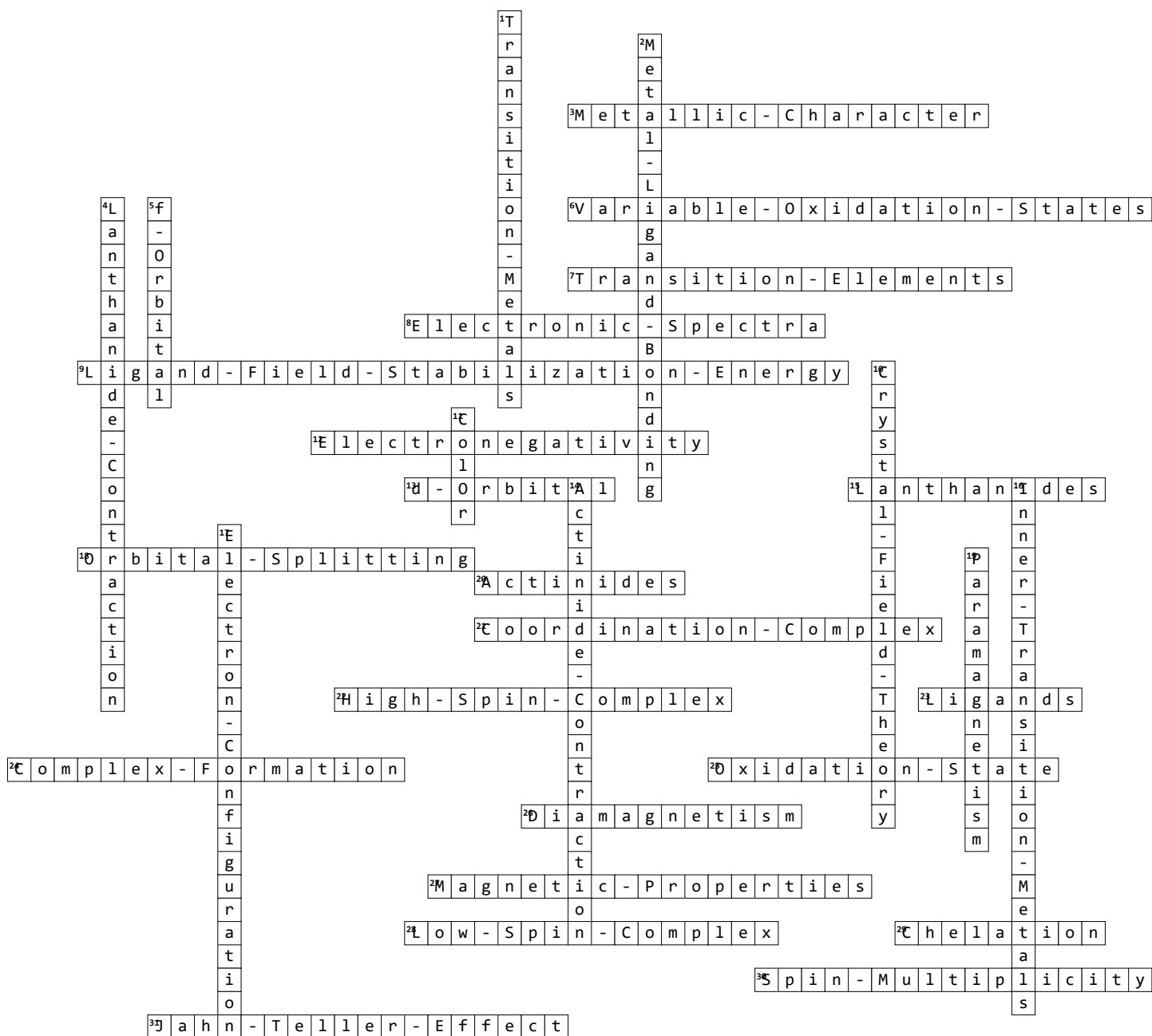


# d and f block elements



## Across

3. Property of metals to lose electrons and form positive ions.
6. Transition metals can exhibit multiple oxidation states due to their d-orbital electrons.
7. Elements in the d-block of the periodic table that have partially filled d-orbitals.
8. Spectra observed in transition metal complexes due to electronic transitions.
9. The energy stabilization that results from the interaction of d-electrons with a ligand field.
12. Measure of an atom's ability to attract electrons in a bond.

## Down

1. Elements found in the d-block of the periodic table, typically metals.
2. The interaction between metal ions and ligands in a coordination complex.
4. The gradual decrease in atomic and ionic radii of lanthanides with increasing atomic number.
5. Orbitals found in the f-block elements, often associated with lanthanides and actinides.
10. A theory explaining the splitting of degenerate d-orbitals in a crystal field.
11. Transition metal complexes are often colored due to d-d transitions.

- 13.** The region of space where electrons in transition metals reside.
- 15.** Series of 15 metallic elements from atomic number 57 to 71.
- 18.** The splitting of d-orbitals into different energy levels in a crystal field.
- 20.** Series of 15 metallic elements from atomic number 89 to 103.
- 21.** A complex formed by a central metal ion bonded to surrounding ligands.
- 22.** Complexes where the electrons have high spin due to weak field ligands.
- 23.** Atoms, ions, or molecules that donate electron pairs to the central metal in a complex.
- 24.** Ability of transition elements to form complexes due to their small size and high charge.
- 25.** The number of electrons an atom can lose, gain, or share during chemical reactions.
- 26.** A type of magnetism where all electrons are paired and the substance is repelled by a magnetic field.
- 27.** Property related to the number of unpaired electrons in transition metals.
- 28.** Complexes where the electrons have low spin due to strong field ligands.
- 29.** Formation of a stable complex by ligands that form multiple bonds to a single metal ion.
- 30.** The total spin state of a molecule or ion, important in determining magnetic properties.
- 31.** Distortion of a molecular geometry due to the presence of degenerate orbitals.
- 14.** A similar decrease in size for actinides due to poor shielding by f-electrons.
- 16.** Elements found in the f-block of the periodic table, including lanthanides and actinides.
- 17.** The arrangement of electrons in an atom or ion.
- 19.** A type of magnetism that occurs due to unpaired electrons.