

Lanthanide Ground Shell Electron Configuration per Ionization State

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| Element Name (Z) | Charge States | | | | | | | | | |
|-------------------|--|---|--------------------------------------|----------------------|----------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | I | II | III | IV | V | VI | VII | VIII | IX | X |
| Lanthanum (57) | [Xe]5d ¹ 6s ² | [Xe]5d ² | [Xe]5d ¹ | [Cd]5p ⁶ | [Cd]5p ⁵ | [Cd]5p ⁴ | [Cd]5p ³ | [Cd]5p ² | [Cd]5p ¹ | [Kr]4d ¹ 05s ² |
| Cerium (58) | [Xe]4f ¹ 5d ¹ 6s ² | [Xe]4f ¹ 5d ² | [Xe]4f ² | [Xe]4f ¹ | [Cd]5p ⁶ | [Cd]5p ⁵ | [Cd]5p ⁴ | [Cd]5p ³ | [Cd]5p ² | [Cd]5p ¹ |
| Praseodymium (59) | [Xe]4f ³ 6s ² | [Xe]4f ³ 6s ¹ | [Xe]4f ³ | [Xe]4f ² | [Xe]4f ¹ | [Cd]5p ⁶ | [Cd]4f ¹ 5p ⁴ | [Cd]4f ¹ 5p ³ | [Cd]4f ¹ 5p ² | [Cd]4f ² |
| Neodymium (60) | [Xe]4f ⁴ 6s ² | [Xe]4f ⁴ 6s ¹ | [Xe]4f ⁴ | [Xe]4f ³ | [Xe]4f ² | [Cd]4f ² 5p ⁵ | [Cd]4f ² 5p ⁴ | [Cd]4f ² 5p ³ | [Cd]4f ² 5p ² | [Cd]4f ² 5p ¹ |
| Promethium (61) | [Xe]4f ⁵ 6s ² | [Xe]4f ⁵ 6s ¹ | [Xe]4f ⁵ | [Xe]4f ⁴ | [Xe]4f ³ | [Cd]4f ³ 5p ⁵ | [Cd]4f ³ 5p ⁴ | [Cd]4f ³ 5p ³ | [Cd]4f ³ 5p ² | [Cd]4f ³ 5p ¹ |
| Samarium (62) | [Xe]4f ⁶ 6s ² | [Xe]4f ⁶ 6s ¹ | [Xe]4f ⁶ | [Xe]4f ⁵ | [Xe]4f ⁴ | [Xe]4f ³ | [Cd]4f ⁴ 5p ⁴ | [Cd]4f ⁴ 5p ³ | [Cd]4f ⁴ 5p ² | [Cd]4f ⁴ 5p ¹ |
| Europium (63) | [Xe]4f ⁷ 6s ² | [Xe]4f ⁷ 6s ¹ | [Xe]4f ⁷ | [Xe]4f ⁶ | [Xe]4f ⁵ | [Cd]4f ⁵ 5p ⁵ | [Cd]4f ⁵ 5p ⁴ | [Cd]4f ⁵ 5p ³ | [Cd]4f ⁵ 5p ² | [Cd]4f ⁵ 5p ¹ |
| Gadolinium (64) | [Xe]4f ⁷ 5d ¹ 6s ² | [Xe]4f ⁷ 5d ¹ 6s ¹ | [Xe]4f ⁷ 5d ¹ | [Xe]4f ⁷ | [Xe]4f ⁶ | [Cd]4f ⁶ 5p ⁵ | [Cd]4f ⁶ 5p ⁴ | [Cd]4f ⁶ 5p ³ | [Cd]4f ⁶ 5p ² | [Cd]4f ⁵ 5p ² |
| Terbium (65) | [Xe]4f ⁹ 6s ² | [Xe]4f ⁹ 6s ¹ | [Xe]4f ⁹ | [Xe]4f ⁸ | [Xe]4f ⁷ | [Cd]4f ⁷ 5p ⁵ | [Cd]4f ⁸ 5p ³ | [Cd]4f ⁷ 5p ³ | [Cd]4f ⁷ 5p ² | [Cd]4f ⁶ 5p ² |
| Dysprosium (66) | [Xe]4f ¹⁰ 6s ² | [Xe]4f ¹⁰ 6s ¹ | [Xe]4f ¹⁰ | [Xe]4f ⁹ | [Xe]4f ⁸ | [Cd]4f ⁸ 5p ⁵ | [Cd]4f ⁸ 5p ⁴ | [Cd]4f ⁹ 5p ² | [Cd]4f ⁸ 5p ² | [Cd]4f ⁸ 5p ¹ |
| Holmium (67) | [Xe]4f ¹¹ 6s ² | [Xe]4f ¹¹ 6s ¹ | [Xe]4f ¹¹ | [Xe]4f ¹⁰ | [Xe]4f ⁹ | [Cd]4f ⁹ 5p ⁵ | [Cd]4f ⁹ 5p ⁴ | [Cd]4f ⁹ 5p ³ | [Cd]4f ¹⁰ 5p ¹ | [Cd]4f ⁹ 5p ¹ |
| Erbium (68) | [Xe]4f ¹² 6s ² | [Xe]4f ¹² 6s ¹ | [Xe]4f ¹² | [Xe]4f ¹¹ | [Xe]4f ¹⁰ | [Cd]4f ¹⁰ 5p ⁵ | [Cd]4f ¹⁰ 5p ⁴ | [Cd]4f ¹⁰ 5p ³ | [Cd]4f ¹⁰ 5p ² | [Cd]4f ¹⁰ 5p ¹ |
| Thulium (69) | [Xe]4f ¹³ 6s ² | [Xe]4f ¹³ 6s ¹ | [Xe]4f ¹³ | [Xe]4f ¹² | [Xe]4f ¹¹ | [Cd]4f ¹¹ 5p ⁵ | [Cd]4f ¹¹ 5p ⁴ | [Cd]4f ¹¹ 5p ³ | [Cd]4f ¹¹ 5p ² | [Cd]4f ¹¹ 5p ¹ |
| Ytterbium (70) | [Xe]4f ¹⁴ 6s ² | [Xe]4f ¹⁴ 6s ¹ | [Xe]4f ¹⁴ | [Xe]4f ¹³ | [Xe]4f ¹² | [Cd]4f ¹² 5p ⁵ | [Cd]4f ¹² 5p ⁴ | [Cd]4f ¹² 5p ³ | [Cd]4f ¹² 5p ² | [Cd]4f ¹² 5p ¹ |
| Lutetium (71) | [Xe]4f ¹⁴ 5d ¹ 6s ² | [Xe]4f ¹⁴ 6s ² | [Xe]4f ¹⁴ 6s ¹ | [Xe]4f ¹⁴ | [Xe]4f ¹³ | [Xe]4f ¹² | [Cd]4f ¹³ 5p ⁴ | [Cd]4f ¹³ 5p ³ | [Cd]4f ¹³ 5p ² | [Cd]4f ¹² 5p ² |

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