References

Overview

* <https://www2.chemistry.msu.edu/faculty/reusch/virttxtjml/intro1.htm>

Calculator

* <https://www.wolframalpha.com/widgets/gallery/view.jsp?id=bd4637e2261cbcdda20d9077e61c712f&reportprob=1> (Electron configuration)

Periodic Table

* <https://pubchem.ncbi.nlm.nih.gov/ptable/>
* Papers
  + Wang, S.-G. and Schwarz, W. . . (2009), Icon of Chemistry: The Periodic System of Chemical Elements in the New Century. Angewandte Chemie International Edition, 48: 3404-3415. <https://doi.org/10.1002/anie.200800827>

Quantum States

* <https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Book%3A_Quantum_States_of_Atoms_and_Molecules_(Zielinksi_et_al)>

Electron configuration

* <https://chem.libretexts.org/Courses/Valley_City_State_University/Chem_115/Chapter_2%3A_Atomic_Structure/2.4_Electron_Configurations>
* <https://chem.libretexts.org/Courses/Sacramento_City_College/SCC%3A_Chem_309_-_General_Organic_and_Biochemistry_(Bennett)/Text/02._Atomic_Structure/2.5%3A_Arrangement_of_Electron_(Shell_Model)>
* <https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_(Physical_and_Theoretical_Chemistry)/Quantum_Mechanics/10%3A_Multi-electron_Atoms/Electron_Configuration>
* <https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_(Physical_and_Theoretical_Chemistry)/Quantum_Mechanics/10%3A_Multi-electron_Atoms/Quantum_Numbers_for_Atoms>
* <https://www.lwtech.edu/campus-life/learning-lab/resources/docs/lwtech-learning-lab-science-atom-structure.pdf>
* <https://byjus.com/chemistry/quantum-numbers/>
* <https://byjus.com/chemistry/electron-configuration/>
* <https://chemistrygod.com/aufbau-principle>
* <https://www.geeksforgeeks.org/quantum-numbers/>
* <https://www.angelo.edu/faculty/kboudrea/general/quantum_numbers/Quantum_Numbers.htm>
* <https://chem.libretexts.org/Courses/University_of_British_Columbia/CHEM_100%3A_Foundations_of_Chemistry/04%3A_Atoms_and_Elements/4.4%3A_The_Properties_of_Protons_Neutrons_and_Electrons>
* <https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Map%3A_Physical_Chemistry_for_the_Biosciences_(Chang)/11%3A_Quantum_Mechanics_and_Atomic_Structure/11.10%3A_The_Schrodinger_Wave_Equation_for_the_Hydrogen_Atom#mjx-eqn-6.6.1>
* <https://chem.libretexts.org/Ancillary_Materials/Reference/Reference_Tables/Mathematical_Functions/M4%3A_Spherical_Harmonics>
* <https://www2.chemistry.msu.edu/faculty/reusch/virttxtjml/intro2.htm>
* <https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Organic_Chemistry_(LibreTexts)/01%3A_Structure_and_Bonding/1.03%3A_Atomic_Structure_-_Electron_Configurations>
* <https://pubs.acs.org/doi/full/10.1021/ed8001286> (The Full Story of the Electron Configuration of the Transition Elements – W.H.E Schwarz)
* Issues with Aufbau
  + <https://edu.rsc.org/feature/the-trouble-with-the-aufbau-principle/2000133.article>
  + Exceptions to Aufbau Principle
    - <https://sciencing.com/what-is-the-basis-for-exceptions-to-the-aufbau-principle-13710232.html>
* Electron spin
  + <https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_(Physical_and_Theoretical_Chemistry)/Quantum_Mechanics/09._The_Hydrogen_Atom/Atomic_Theory/Electrons_in_Atoms/Electron_Spin>
  + <http://hyperphysics.phy-astr.gsu.edu/hbase/spin.html>
  + High/Low spin complexes
    - <https://chem.libretexts.org/Courses/Douglas_College/DC%3A_Chem_2330_(O%27Connor)/4%3A_Crystal_Field_Theory/4.3%3A_High_Spin_and_Low_Spin_Complexes>
  + Screening/Shielding of atomic core
    - <https://chem.libretexts.org/Bookshelves/General_Chemistry/Map%3A_Chemistry_-_The_Central_Science_(Brown_et_al.)/07%3A_Periodic_Properties_of_the_Elements/7.02%3A_Shielding_and_Effective_Nuclear_Charge>
* Atomic Orbitals
  + Schwarz, W.H.E. (2006), Measuring Orbitals: Provocation or Reality?. Angewandte Chemie International Edition, 45: 1508-1517. <https://doi.org/10.1002/anie.200501333>
  + <https://chem.libretexts.org/Courses/Howard_University/General_Chemistry%3A_An_Atoms_First_Approach/Unit_1%3A__Atomic_Structure/Chapter_2%3A_Atomic_Structure/Chapter_2.5%3A_Atomic_Orbitals_and_Their_Energies> (Overview of lots of important concepts)

Chemical Bonding

* <https://ncert.nic.in/textbook/pdf/kech104.pdf>
* <https://chem.libretexts.org/Bookshelves/General_Chemistry/Book%3A_Chem1_(Lower)/09%3A_Chemical_Bonding_and_Molecular_Structure/9.01%3A_Three_Views_of_Chemical_Bonding>
* <https://www2.chemistry.msu.edu/faculty/reusch/virttxtjml/intro3.htm>
* <https://web.ung.edu/media/chemistry/Chapter7/Chapter7-ChemicalBonding-MolecularGeometry.pdf>
* <https://www.chemguide.co.uk/atoms/properties/atomorbs.html>
* <https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Advanced_Theoretical_Chemistry_(Simons)/06%3A_Electronic_Structure/6.10%3A_Molecular_Orbitals> (mentions of Rydberg orbitals)
* <https://chem.libretexts.org/Courses/Purdue/Purdue%3A_Chem_26505%3A_Organic_Chemistry_I_(Lipton)/Chapter_1._Electronic_Structure_and_Chemical_Bonding/1.03_Valence_electrons_and_open_valences>
* Lewis Structures
  + <https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_(Physical_and_Theoretical_Chemistry)/Physical_Properties_of_Matter/Atomic_and_Molecular_Properties/Lewis_Structures>
  + <https://chemed.chem.purdue.edu/genchem/topicreview/bp/ch8/lewis.html>
* Hybrid Atomic Orbitals
  + <https://openstax.org/books/chemistry-2e/pages/8-2-hybrid-atomic-orbitals>
* Molecular Orbital Theory
  + <https://www.chem.fsu.edu/chemlab/chm1046course/motheory.html>
  + <https://chemed.chem.purdue.edu/genchem/topicreview/bp/ch8/mo.html>
  + <https://chem.libretexts.org/Bookshelves/Inorganic_Chemistry/Book%3A_Inorganic_Chemistry_(Saito)/06%3A_Chemistry_of_Transition_Metals>
  + <https://www.ch.ic.ac.uk/vchemlib/course/mo_theory/main.html>
  + <https://pressbooks-dev.oer.hawaii.edu/chemistry/chapter/molecular-orbital-theory/>
  + <https://chemistnotes.com/inorganic/molecular-orbital-theory-postulates-lcao-method-and-molecular-orbital-diagram/>
  + <https://chem.libretexts.org/Courses/University_of_California_Davis/UCD_Chem_124A%3A_Fundamentals_of_Inorganic_Chemistry/05%3A_Molecular_Orbitals/5.02%3A_Homonuclear_Diatomic_Molecules/5.2.01%3A_Molecular_Orbitals>
* Valence Bond Theory
  + <https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_(Physical_and_Theoretical_Chemistry)/Chemical_Bonding/Valence_Bond_Theory>
  + <https://pressbooks-dev.oer.hawaii.edu/chemistry/chapter/valence-bond-theory/>
* Combination of VB and MO theories
  + <http://ch301.cm.utexas.edu/imfs/#mo/combining-vb-mo.html>
* Linear Combination of Atomic Orbitals
  + <https://chem.libretexts.org/Courses/New_York_University/CHEM-UA_127%3A_Advanced_General_Chemistry_I/14%3A_Linear_combination_of_atomic_orbitals>
  + <https://chemistnotes.com/inorganic/molecular-orbital-theory-postulates-lcao-method-and-molecular-orbital-diagram/> (mainly focuses on MO Theory)
* Bond types
  + <https://chem.libretexts.org/Bookshelves/Introductory_Chemistry/Introductory_Chemistry_(CK-12)/09%3A_Covalent_Bonding/9.24%3A_Sigma_and_Pi_Bonds>
  + <https://chem.libretexts.org/Bookshelves/General_Chemistry/Book%3A_ChemPRIME_(Moore_et_al.)/07%3A_Further_Aspects_of_Covalent_Bonding/7.08%3A_Sigma_and_Pi_Bonds>

Schrodinger’s Wave Function

* <https://galileo.phys.virginia.edu/classes/252/wave_equations.html>