

Chemistry

The Chemistry category reflects chemical properties of substances known to be produced or modified by life. Chemical synthesis in biological systems seeks to maximize fitness and adaptive utility. In contrast, abiotic reactions are dictated by kinetics and thermodynamics. This difference can result in diagnostic chemical properties of substances (elements, molecules, compounds, minerals) that serve as proxy for biological or abiotic sources, including the structure of organic molecules, the relative abundance of choice of certain enantiomers, or the isotopic makeup of organic and inorganic compounds. In addition, biological processes can modify the chemical composition of an environment from the cellular to the planetary scale in ways that are distinguishable from abiotic processes — including the composition and relative abundances of elements and molecules within living things (e.g., atmospheric gases, chemical composition of crustal minerals and rocks).