The geochemical redox conditions of some important elements

**Molybdenum**
- Mo³⁺: molybdate minerals: Wulfenite, PbMoO₄
- Mo⁴⁺: molybdenite: PbMoO₄
- Mo⁵⁺: Fe₂MoO₄H₂O

**Iron**
- Fe⁺⁺: goethite FeOOH
- Fe⁺⁺⁺: hematite Fe₂O₃

**Carbon**
- C₀: graphite, diamond
- C=O: formate: CH₂O

**Nitrogen**
- N₁⁻: ammonia: NH₃
- N₂: molecular nitrogen: N₂

**Oxygen & Hydrogen**
- O₂: atmospheric oxygen: O₂

**Sulfur**
- S⁰: elemental sulfur: S

**Selenium**
- Se⁰: elemental selenium: Se

**Some Fundamentals of Mineralogy and Geochemistry**
- Ferrimolybdite Fe₂MoO₄H₂O
- Molybdate MoO₄(aq)
- Dissolved molybdate: MoO₄²⁻

**Note:**
- Elements do not exist in nature in elemental forms like these because no natural environments are sufficiently reducing.
- Noble gases (except He, Ne, Ar) and oxygen do not exist in nature as molecules.
- The periodic table is derived from the abundances of elements on Earth. The most abundant element is oxygen, accounting for 46.6% of the Earth's mass.

**Redox Potential (Eh/Pc)**
- Eh (mV) ranges from -200 to 600 mV.
- Pc ranges from -6 to 20 mV.
- Eh/Pc conditions are critical in determining the stability of redox states of elements.