

## SECTION OVERVIEW

### 1.8: Extended Explanations - Helmholtz and Gibbs Energies

#### 1.8.1: Helmholtz Energy

#### 1.8.2: Gibbs Energy Determines the Direction of Spontaneity at Constant Pressure and Temperature

#### 1.8.3: The Maxwell Relations

#### 1.8.4: The Enthalpy of an Ideal Gas is Independent of Pressure

#### 1.8.5: Thermodynamic Functions have Natural Variables

#### 1.8.6: The Standard State for a Gas is an Ideal Gas at 1 Bar

#### 1.8.7: The Gibbs-Helmholtz Equation

#### 1.8.8: Fugacity Measures Nonideality of a Gas

#### 1.8.E: Helmholtz and Gibbs Energies (Exercises)

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