$$\begin{array}{c} \text{CO}_{2(\text{gas})} \rightleftharpoons \text{CO}_{2(\text{liquid})}\\ \text{H}_2\text{S}_{(\text{gas})} \rightleftharpoons \text{H}_2\text{S}_{(\text{liquid})}\\ \text{Stoichiometry, } \mu_i^0, \, \mu_i^{\text{ex}}, \, \textit{K}_{j,\text{des}} \\ \end{array} \rightarrow \begin{array}{c} \text{Speciation in the liquid phase} \\ \text{CO}_{2(\text{gaq.})} + 2\,\text{H}_2\text{O} \rightleftharpoons \text{HCO}_3^- + \text{H}_3\text{O}^+ \\ \text{HCO}_3^- + \text{H}_2\text{O} \rightleftharpoons \text{CO}_3^{2-} + \text{H}_3\text{O}^+ \\ \text{MDEAH}^+ + \text{H}_2\text{O} \rightleftharpoons \text{MDEA} + \text{H}_3\text{O}^+ \\ \text{2}\,\text{H}_2\text{O} \rightleftharpoons \text{H}_3\text{O}^+ + \text{OH}^- \\ \text{H}_2\text{S}_{(\text{qaq.})} + \text{H}_2\text{O} \rightleftharpoons \text{SH}^- + \text{H}_3\text{O}^+ \\ \text{SH}^- + \text{H}_2\text{O} \rightleftharpoons \text{S}^{2-} + \text{H}_3\text{O}^+ \\ \end{array}$$

Chemical Reactions

Absorption