

neighbor Sn-Sn and Mg-Mg interactions. The requirements of symmetry greatly reduce the number of independent constants.

$$D^{\text{Sn core-Sn Shell}} = \begin{pmatrix} \delta & 0 & 0 \\ 0 & \delta & 0 \\ 0 & 0 & \delta \end{pmatrix}$$

$$D^{\text{Mg-Sn}} = \begin{pmatrix} \alpha_1 & \beta_1 & \beta_1 \\ \beta_1 & \alpha_1 & \beta_1 \\ \beta_1 & \beta_1 & \alpha_1 \end{pmatrix}$$

$$D^{\text{Sn-Sn}} = \begin{pmatrix} \alpha_2 & 0 & 0 \\ 0 & \beta_2 & \gamma_2 \\ 0 & \gamma_2 & \beta_2 \end{pmatrix},$$

$$D^{\text{Mg-Mg}} = \begin{pmatrix} \beta_3 & 0 & 0 \\ 0 & \beta_3 & 0 \\ 0 & 0 & \alpha_3 \end{pmatrix}.$$