$$B'_{111} = \frac{1}{9} B_{111} + \frac{2}{9} B_{123} + \frac{4}{9} B_{144} + \frac{8}{9} B_{155} + \frac{4}{9} B_{441} + \frac{8}{9} B_{456} ,$$

and

$$B'_{112} = \frac{1}{9} B_{111} + \frac{2}{9} B_{123} + \frac{1}{9} B_{144} + \frac{2}{9} B_{155} - \frac{2}{9} B_{441} - \frac{4}{9} B_{456}$$

are obtained from the tensor transformation. Using Equation (III.6), Equation (III.7), and

$$\alpha_1^2 + \alpha_2^2 + \alpha_3^2 = 1,$$

one obtains the energy expression

$$\mathcal{E}_{me}^{<111>} = \left[b_2 e + \left(\frac{5}{2} b_2 + \frac{1}{6} B_{144} + \frac{1}{3} B_{155} + \frac{1}{3} B_{441} + \frac{2}{3} B_{456}\right) e^2\right] \alpha_1^2. \tag{III.9}$$

With Equation (III.8) and Equation (III.9), one obtains the expressions for η_1 and η_2 in Equation (3.14) and hence the independent grain magnetization curve. The finite strain correction in either theory was not found to be substantial.