

APPENDIX II

LIST OF SYMBOLS

Chapters II and III

- \vec{H} = magnetic field intensity = $\vec{H}_e + \vec{H}_d$
 \vec{H}_e = external field
 \vec{H}_d = demagnetizing field
 \vec{M} = magnetization = magnetic moment/volume
 \vec{M}_s = saturation magnetization = $M_s \vec{\alpha}$
 $\vec{\alpha}$ = $(\alpha_1, \alpha_2, \alpha_3)$ = direction cosines of magnetization referred to crystal axes

 S = entropy
 T = temperature
 U = total energy
 E = total Legendre transformed energy
 \mathcal{E} = specific energy corresponding to E
 \mathcal{E}_H = interaction energy
 \mathcal{E}_d = demagnetization energy
 \mathcal{E}_{ex} = exchange energy
 \mathcal{E}_K = crystal anisotropy energy
 \mathcal{E}_{me} = magnetoelastic energy
 \mathcal{E}_A = total anisotropy energy = $\mathcal{E}_K + \mathcal{E}_{me}$
 \mathcal{E}_{LOC} = local energy = $\mathcal{E}_K + \mathcal{E}_{me} + \mathcal{E}_{ex}$
 x_i = Eulerian coordinates

- a_i = Lagrangian coordinates
 $\partial x_i / \partial a_j$ = deformation gradients
 E_{ij} = finite strain
 e_{ij} = infinitesimal strain
 e = extension = $\rho_0 / \rho - 1$
 ρ = density
 \mathcal{S} = symbol for shock wave
 \mathcal{R} = symbol for rarefaction wave
 K_1 = crystal anisotropy constant
 b_1, b_2 = first order magnetoelastic constants
 B = average of first order magnetoelastic constants
 $B_{111}, \text{ etc.}$ = second order magnetoelastic constants
 σ_w = domain wall energy/area
 D = domain width
 L = ferromagnetic slab thickness
 A = exchange constant
 $F(\Omega)$ = distribution function of magnetization vectors
 η_1, η_2 = $-M_s / 2b_1 e, -M_s / 2b_2 e$
 σ_x, σ_y = stress components
 P = hydrostatic pressure
 \bar{P} = mean pressure
 μ = shear modulus

Chapters IV and V

- I = current
 \mathcal{E}_0 = initial voltage on capacitor
 C = capacitance
 L = inductance