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 = $\rho_o/\rho - 1$

ρ = density

$\mathscr{S}$ = symbol for shock wave

$\mathscr{R}$ = 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}, 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 = $-M_s/2b_1e$, $-M_s/2b_2e$

σ_x, σ_y = stress components

P = hydrostatic pressure

$\overline{P}$ = mean pressure

μ = shear modulus

Chapters IV and V

I = current

$\mathcal{E}_o$ = initial voltage on capacitor

C = capacitance

L = inductance