

# Errata to: Metallic Micro and Nano Materials

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Errata to: EngMat  
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## Preface (pp. v–vi)

Location	Printed	Should be	Comment
p. vi	Akita	Sendai	City name for H. Tohmyoh

## Introduction (pp. 1–14)

Location	Printed	Should be	Comment
None			

## Basis of Atomic Diffusion (pp. 15–52)

Location	Printed	Should be	Comment
p. 16, line 13	results	result	Delete “s”
p. 23, line 19	acceleration test of EM	acceleration test of EM for IC Al lines	Add “for IC Al lines”
p. 26, line 9	$j_x$	$j_x$	Put “ $x$ ” in italics
p. 26, line 10	$J_x$	$j_x$	Decapitalize “ $J$ ” and put “ $x$ ” in italics
p. 27, line 4	,	.	Change comma to period after Eq. (33)
p. 30, line 17	0.00442	0.00442.	Add period

(continued)

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Location	Printed	Should be	Comment
p. 34, line 6	$-2\frac{\kappa\Omega\partial^2 N}{N_0\partial x\partial y}\sin 2\theta\}$	$-2\frac{\kappa\Omega}{N_0}\frac{\partial^2 N}{\partial x\partial y}\sin 2\theta\}$	Divide into two fractions
p. 37, line 5	Printed $+\frac{\sqrt{3}}{4}\pi d\left[-\frac{\kappa\Omega}{N_0}\left(\frac{\partial^2 N}{2}+\frac{\partial^2 N}{\partial y^2}\right)-\frac{\kappa\Omega/N_0}{kT}\left(D_x\frac{\partial N}{\partial x}+D_y\frac{\partial N}{\partial y}\right)\right]$	Should be $+\frac{\sqrt{3}}{4}\pi d\left[-\frac{\kappa\Omega}{N_0}\left(\frac{\partial^2 N}{\partial x^2}+\frac{\partial^2 N}{\partial y^2}\right)-\frac{\kappa\Omega/N_0}{kT}\left(D_x\frac{\partial N}{\partial x}+D_y\frac{\partial N}{\partial y}\right)\right]$	Comment Insert “ $\partial x$ ” into denominator and “ $\partial N$ ” into numerator
p. 37, line 14	comparing	comparing void formation in	Add “void formation in”
p. 38, line 3	Printed $=\frac{\sqrt{3}d^2}{4\delta}\left[AFD_{\text{gen}}^* \text{end}+\frac{\partial AFD_{\text{gen}}^* \text{end}}{\partial x}(l_d-l^*)\right]$	Should be $=\frac{\sqrt{3}d^2}{4\delta}\left[AFD_{\text{gen}}^* \text{end}+\frac{\partial AFD_{\text{gen}}^* \text{end}}{\partial x}(l_d-l^*)\right]$	Comment Put “end” in inferior
p. 38, line 11	Printed $v_d=\left[AFD_{\text{gen}}^* \text{end}+\frac{\partial AFD_{\text{gen}}^* \text{end}}{\partial x}(l_d-l^*)\right]l^*\Omega$	Should be $v_d=\left[AFD_{\text{gen}}^* \text{end}+\frac{\partial AFD_{\text{gen}}^* \text{end}}{\partial x}(l_d-l^*)\right]l^*\Omega$	Comment Put “end” in inferior
p. 39, line 4	Printed $F_{\text{gb}}^* \text{end}=\sum_i\sum_j\left\{v_d _{ij}-\left[(AFD_{\text{gen}}^* \text{end})_i+\left(\frac{\partial AFD_{\text{gen}}^* \text{end}}{\partial x}\right)_i(l_d _{ij}-l^*)\right]l^*\Omega\right\}^2$	Should be $F_{\text{gb}}^* \text{end}=\sum_i\sum_j\left\{v_d _{ij}-\left[(AFD_{\text{gen}}^* \text{end})_i+\left(\frac{\partial AFD_{\text{gen}}^* \text{end}}{\partial x}\right)_i(l_d _{ij}-l^*)\right]l^*\Omega\right\}^2$	Comment Put “end” in inferior
p. 45, line 3 of figure caption of Fig. 14	[71]	[72]	Change reference number

**Fabrication of Micro and Nano Metallic Materials (pp. 53–92)**

Location	Printed	Should be	Comment
p. 55, line 17	'the electro-thermal'	the 'electro-thermal'	Change position of single quotation marks
p. 72, line 4	EM failure	EM failure in IC	Add "in IC"
p. 72, line 12	Eqs. (55), (57)	Eqs. (55)–(57)	Replace a comma with an en dash
p. 72, line 13	Eq. (58) in Basis of Atomic Diffusion given in Sect. 1.7 in Basis of Atomic Diffusion	Eq. (58) given in Sect. 1.7 in Basis of Atomic Diffusion	Delete the first "in Basis of Atomic Diffusion"
p. 73, line 2	Assuming	Assume	Be in imperative form
p. 81, line 15	chpater	chapter	Misspelling
p. 89, line 17	Acknowledgments	Acknowledgment	Change to singular

**Evaluation of Mechanical Properties (pp. 93–142)**

Location	Printed	Should be	Comment
p. 99, line 4	called as	called the	Change "as" to "the"
p. 101, in 3rd line from bottom	large value.	large value (see Sect. 2.4).	Insert "(see Sect. 2.4)"
p. 101, in 2nd line from bottom	called as	called the	Change "as" to "the"
p. 102, line 6	called as	called	Delete "as"
p. 105, in 4th line after Eq. (12)	rotary inertia)	rotary inertia	Delete a parenthesis
p. 113, line 4	Sect. 3.3.1	Sect. 3.1 in the preceding chapter	Replace "3.3.1" with "3.1 in the preceding chapter"
p. 124, in 1st line before Eq. (62)	in Eq. (53)	in Eq. (42)	Change 53 to 42
p. 130, line 16	spattering	spattering	Misspelling
p. 133, line 1	Printed Nano/Micromaterials	Should be Nano/Micromaterials	Delete indent
p. 136, line 1 of figure caption of Fig. 31	$aE\dots b\sigma_Y\dots cE'$ ...	$a E\dots b \sigma_Y\dots c E'$ ...	Insert a space for each
p. 137, in Acknowledgments	M.Muraoka. H.Tohmyoh.	M. M. H. T.	Change to initials

**Evaluation of Electrical Properties (pp. 143–172)**

Location	Printed	Should be	Comment
p. 145, line 15	nanowires	nanowire	Change to singular
p. 146, line 28	diameter a the only lateral dimension	diameter is the only lateral dimension	Change “a” to “is”
p. 151, the end of the caption of Fig. 4		(scale bar 2 $\mu$ m)	Add (scale bar 2 $\mu$ m)
p. 152, line 24	[24, 29]	[25, 28]	Change reference numbers
p. 152, line 37; p. 154, lines 4, 8 and 18;	[29]	[28]	Change reference number
p. 156, line 14			
p. 157, the last line of caption of Fig. 9	the mean	the variation of them	Replace “mean” with “variation of them”
p. 157, line 11	is on the nanometer	on the nanometer	Delete “is”
p. 158, line 17	[27]	[23]	Change reference number
p. 158, line 29	[25, 26, 30, 31]	[26, 29, 30, 31]	Change 25 to 29
p. 159, lines 9, 26 and 34	[25]	[26]	Change reference number
p. 159, line 16	strong	strongly	Change to adverb
p. 159, line 36;	[26]	[29]	Change reference number
p. 161, line 7			
p. 163, line 11	the step height of	the step height is	Change “of” to “is”
p. 165, line 5	simultaneous	simultaneously	Change to adverb
p. 166, line 11–12	[23, 28]	[24, 27]	Change reference numbers
p. 167, line 1	Symbol $\omega$	Symbol $\omega$	Insert a space
p. 167, lines 4 and 8	[28]	[24]	Change reference number
p. 168, line 12	Eqs. 5–8 and 5–11	Eqs. 8 and 11	Delete “5-” for each
p. 169, the last line of caption of Fig. 19	13	12	Change footnote number
p. 170, ref. 28	(2007a)	(2007)	Delete “a”
p. 170, ref. 29	(2007b)	(2007)	Delete “b”
p. 171, line 5	31.	32.	Change reference number

**Modification of Nano/Micromaterials (pp. 173–220)**

Location	Printed	Should be	Comment
p. 173, line 7 in Abstract	in thin wires are	in thin wires is	Change “are” to “is”
p. 175, line 1 of figure caption of Fig. 2	10-nmdiameter	10-nm diameter	Insert a space
p. 177, line 6 from bottom	$K = 72 \text{ W/mK}$	$K = 72 \text{ W/(mK)}$	“mK” should be parenthesized
p. 177, line 5 from bottom	$c = 134 \text{ J/kg K}$	$c = 134 \text{ J/(kg K)}$	“kg K” should be parenthesized
p. 179, in 13th line from bottom	$K = 72 \text{ W/mK}$	$K = 72 \text{ W/(mK)}$	“mK” should be parenthesized
p. 179, in 13th line from bottom	$c = 134 \text{ J/kg K}$	$c = 134 \text{ J/(kg K)}$	“kg K” should be parenthesized
p.179, in 12th line from bottom	$H = 30 \text{ W/m}^2\text{K}$	$H = 30 \text{ W/(m}^2\text{K)}$	“m <sup>2</sup> K” should be parenthesized
p. 181, line 2	Eq. (1).	1.2.	Change Eq. (1) to 1.2
p. 183, Table 1	$I/A$	$I/A$	Variables $I$ and $A$ should be italic
p. 188, line 2 of figure caption of Fig. 12	of $A$ in <b>b</b>	of $A$ in <b>a</b>	Change <b>b</b> to <b>a</b>
p. 188, in 5th line from bottom	Figure 13a–d correspond to	Figure 13a–d corresponds to	Change “correspond” to “corresponds”
p. 192, line 6	shown experimentally	experimentally	Delete “shown”
p. 196, line 10	Figure 20a and b represents	Figure 21a and b represents	Change 20 to 21
p. 196, line 12	Figure 21a–d shows	Figure 21c and d shows	Change “a–d” to “c and d”
p. 203, line 6 of figure caption of Fig. 27	electrode 3 and 4	electrodes 3 and 4	Change “electrode” to “electrodes”
p. 204, line 5	in the previous section,	in Sect. 2.3.2,	Change “the previous section” to “Sect. 2.3.2”

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Location	Printed	Should be	Comment
p. 205, in 9th-10th lines from bottom	SiC ([68], BC [33], and NaFe <sub>4</sub> P <sub>12</sub> [32] have	SiC [68], BC [33], and NaFe <sub>4</sub> P <sub>12</sub> [32], have	Delete a parenthesis and insert a comma after [32]
p. 210, line 7	Sect. 3.3.1	Sect. 3.1 in Fabrication of Micro and Nano Metallic Materials	Replace “3.3.1” with “3.1 in Fabrication of Micro and Nano Metallic Materials”
p. 216, in 7th line from bottom	(See Table 1	(see Table 1	Change to lowercase
p. 216, in 6th line from bottom	(See Fig.21a	(see Fig. 21a	Change to lowercase and insert a space before 21a

**Index (pp. 221–225)**

Location	Printed	Should be	Comment
p. 221	Acceleration test, 23, 25, 33, 38, 40, 42, 45, 49	Acceleration test, 23, 25, 33, 38, 40, 42	Delete 45 and 49
p. 221	Anodic alumina, 5, 6, 145	Anodic alumina, 5, 6, 146	Change 145 to 146
p. 221	Aspect ratio, 46, 57, 59, 159, 160	Aspect ratio, 46, 57, 59, 159, 162	Change 160 to 162
p. 221	Printed Atomic diffusion, 11, 15, 16, 18, 19, 35, 36, 43, 46, 54, 82, 212 flux, 15, 17-21, 33, 36-38, 47, 48, 63, 66 Should be Atomic diffusion, 11, 15, 16, 18, 19, 36, 43, 46, 54, 82, 212 flux, 15, 17-21, 33, 36-38, 47, 66		Delete 35 for atomic diffusion Delete 48 and 63 for atomic flux
p. 221	Printed Bond-order-bond-length-bond strength (bond-OLS) correlation, 129 Should be Bond-order-bond-length-bond-strength (bond-OLS) correlation, 128		Insert a hyphen before “strength” and change 129 to 128
p. 221	Brass (BS), 168	Brass (BS), 169	Change 168 to 169
p. 221	Cantilever, 94, 98, 105, 107, 110, 121, 129, 133, 152, 159, 162, 213	Cantilever, 94, 98, 105, 107, 110, 121, 129, 133, 152, 160, 162, 213	Change 159 to 160
p. 221	Printed Characteristic constant, 15, 34, 35, 37, 39, 41, 42 Should be Characteristic constant, 15, 35, 37, 39, 41, 42		Delete 34

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Location	Printed	Should be	Comment
p. 221	Coaxial line, 163, 164, 167	Coaxial line, 164, 167	Delete 163
p. 221	Printed Crystalline, 99, 112, 213 plane, 159, 160 Should be Crystalline, 99, 112, 213 plane, 159, 161		Change 160 to 161 for crystalline plane
p. 222	Printed Elastic modulus, 2, 12, ... Should be Elastic modulus, 2, 12, ...		Indent “modulus”
p. 222	Printed Electron, 17, 35, 43, 48 -beam-evaporation technique (EBET), 210 Should be Electron, 17, 35, 43, 48 -beam evaporation technique (EBET), 210		Replace a hyphen with a space before “evaporation”
p. 223	Printed Least-squares method (least-squaresfit), 38, Should be Least-squares method (least-squares fit), 38,		Insert a space before “fit”
p. 223	Lifetime, 16, 19, 20, 34, 62, 75, 78, 79, 80	Lifetime, 16, 19, 20, 35, 62, 75, 78, 79, 80	Change 34 to 35
p. 223	Printed Lower-coordinated surface-atom, 128 Should be Lower-coordinated surface atom, 128		Replace a hyphen with a space before “atom”
p. 223	Printed Mechanical diode (MD), 101 property, 45, 93, 126, 130, 136 Should be Mechanical diode (MD), 101, 102 property, 45, 93, 126, 130		Add 102 for mechanical diode and delete 136 for mechanical property
p. 223	Misfit strain, 206, 208, 214	Misfit strain, 205, 208, 214	Change 206 to 205
p. 223	Printed Molybdenum disulfide (MoS <sub>2</sub> ), Should be Molybdenum disulfide (MoS <sub>2</sub> ),		2 is inferior

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Location	Printed	Should be	Comment
p. 223	Printed Moment of inertia, see also rotary inertia of area, 104	Should be Moment of inertia, see also rotary inertia, 104, 109	Delete “of area” and add 109
p. 224	Printed Plasma-enhanced chemical vapor deposition(PE-CVD), 39	Should be Plasma-enhanced chemical vapor deposition (PE-CVD), 39, 76	Insert a space after “deposition” and add 76
p. 224	Printed Polycrystalline line, 18, 20, 33, 34, 35, 36, 37, 74, 97	Should be Polycrystalline, 97 line, 18, 20, 33, 34, 35, 37, 74	Move 97 behind “Polycrystalline” and delete 36
p. 224	Rotary inertia, 105, 109, 114	Rotary inertia, 105, 114	Delete 109
p. 224	Printed Scanning electron microscope (SEM), 42, 44, 47, profile, 162, 165	Should be Scanning electron microscope (SEM), 42, 44, 47, profile, 163, 165	Delete one 44 for scanning electron microscope Change 162 to 163 for scanning profile
p. 224	Silicon (Si) dioxide (SiO <sub>2</sub> ),	Silicon (Si) dioxide (SiO <sub>2</sub> ),	2 is inferior
p. 224	Silicon (Si) nitride (Si <sub>3</sub> N <sub>4</sub> ),	Silicon (Si) nitride (Si <sub>3</sub> N <sub>4</sub> ),	3 and 4 are inferior
p. 224	Size-dependent, 144, 145, 169	Size-dependent, 144, 145	Delete 169
p. 225	Printed Stress migration (SM), 4, 6, 15, 19, 42, 43, 45, 46, 47, 48, 113 release, 11, 44, 46, 54	Should be Stress migration (SM), 4, 6, 15, 42, 43, 45, 46, 47, 48, 113 release, 11, 54	Delete 19 for stress migration Delete 44 and 46 for stress release

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Location	Printed	Should be	Comment
p. 225	Printed Template assisted synthesis, 146		Add another expression
	Should be Template assisted synthesis, 146 -based synthesis, 4, 5, 6		
p. 225	Printed Tin dioxide (SnO <sub>2</sub> ),		2 is inferior
	Should be Tin dioxide (SnO <sub>2</sub> ),		

**Back Cover**

Location	Printed	Should be	Comment
line 18	expected are expected to be	expected to be	Delete "expected are"