フェーズフィールド法入門　正誤表

2018 年 9 月 11 日 (火)

[誤] 41 ページ　式(4.1)

$$\mu_3^{\mathrm{sys}} \equiv \frac{\delta G_{\mathrm{sys}}}{\delta c_2} = -L^{\alpha}_{\mathrm{A,B}} c_2 - L^{\alpha}_{\mathrm{A,C}} c_3 + L^{\alpha}_{\mathrm{B,C}}(1-c_2-2c_3) + RT\{\ln c_3 - \ln(1-c_2-c_3)\} - \kappa_0(2\nabla^2 c_3 + \nabla^2 c_2)$$

[正]

$$\mu_3^{\mathrm{sys}} \equiv \frac{\delta G_{\mathrm{sys}}}{\delta c_2} = -L^{\alpha}_{\mathrm{A,B}} c_2 + L^{\alpha}_{\mathrm{B,C}} c_2 + L^{\alpha}_{\mathrm{A,C}}(1-c_2-2c_3) + RT\{\ln c_3 - \ln(1-c_2-c_3)\} - \kappa_0(2\nabla^2 c_3 + \nabla^2 c_2)$$

[誤] 47 ページ　プログラムの上から2行目以降

```
if(c2h[i][j]>=1.0){c2h[i][j]=1.0-1.0e-06;}//濃度場の変域補正
if(c2h[i][j]<=0.0){c2h[i][j]=1.0e-06;}
if(c3h[i][j]>=1.0){c3h[i][j]=1.0-1.0e-06;}
if(c3h[i][j]<=0.0){c3h[i][j]=1.0e-06;}
```

[正]

```
if(c2h2[i][j]>=1.0){c2h2[i][j]=1.0-1.0e-06;}//濃度場の変域補正
if(c2h2[i][j]<=0.0){c2h2[i][j]=1.0e-06;}
if(c3h2[i][j]>=1.0){c3h2[i][j]=1.0-1.0e-06;}
if(c3h2[i][j]<=0.0){c3h2[i][j]=1.0e-06;}
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[誤] 79 ページ　式(4.50)

$$\begin{aligned}
G_{\mathrm{c}} &= \alpha_1(P_1^2+P_2^2+P_3^2) + \alpha_{11}(P_1^4+P_2^4+P_3^4) \\
&\quad + \alpha_{12}(P_1^2P_2^2+P_2^2P_3^2+P_3^2P_1^2) + \alpha_{111}(P_1^6+P_2^6+P_3^6) \\
&\quad + P_{112}[P_1^2(P_2^4+P_3^4)+P_2^2(P_1^4+P_3^4)+P_3^2(P_1^4+P_2^4)] \\
&\quad + \alpha_{123}P_1^2P_2^2P_3^2 + \alpha_{1111}(P_1^8+P_2^8+P_3^8) \\
&\quad + \alpha_{1112}[P_1^6(P_2^2+P_3^2)+P_2^6(P_1^2+P_3^2)+P_3^6(P_1^2+P_2^2)] \\
&\quad + \alpha_{1122}(P_1^4P_2^4+P_2^4P_3^4+P_3^4P_1^4) \\
&\quad + \alpha_{1123}(P_1^4P_2^2P_3^2+P_1^2P_2^4P_3^2+P_1^2P_2^2P_3^4)
\end{aligned}$$

[正]

$$\begin{aligned}
G_{\mathrm{c}} &= \alpha_1(P_1^2+P_2^2+P_3^2) + \alpha_{11}(P_1^4+P_2^4+P_3^4) \\
&\quad + \alpha_{12}(P_1^2P_2^2+P_2^2P_3^2+P_3^2P_1^2) + \alpha_{111}(P_1^6+P_2^6+P_3^6) \\
&\quad + \alpha_{112}[P_1^2(P_2^4+P_3^4)+P_2^2(P_1^4+P_3^4)+P_3^2(P_1^4+P_2^4)] \\
&\quad + \alpha_{123}P_1^2P_2^2P_3^2 + \alpha_{1111}(P_1^8+P_2^8+P_3^8) \\
&\quad + \alpha_{1112}[P_1^6(P_2^2+P_3^2)+P_2^6(P_1^2+P_3^2)+P_3^6(P_1^2+P_2^2)] \\
&\quad + \alpha_{1122}(P_1^4P_2^4+P_2^4P_3^4+P_3^4P_1^4) \\
&\quad + \alpha_{1123}(P_1^4P_2^2P_3^2+P_1^2P_2^4P_3^2+P_1^2P_2^2P_3^4)
\end{aligned}$$

［誤］　80 ページ　式(4.54)の下

$$\frac{\partial G_c}{\partial P_1} = 2\alpha_1 P_1 + 4\alpha_{11} P_1^3 + 2\alpha_{12} P_1 (P_2^2 + P_3^2)$$
$$+ 6\alpha_{111} P_1^5 + 2\alpha_{112} P_1 [(P_2^4 + P_3^4) + 2P_1^2 (P_2^2 + 4P_3^2)] + 2\alpha_{123} P_1 P_2^2 P_3^2$$
$$+ 8\alpha_{1111} P_1^7 + 2\alpha_{1112} P_1 [3P_1^4 (P_2^2 + P_3^2) + (P_2^6 + P_3^6)]$$
$$+ 4\alpha_{1122} P_1^3 (P_2^4 + P_3^4) + 2\alpha_{1123} P_1 [2P_1^2 P_2^2 P_3^2 + P_2^4 P_3^2 + P_2^2 P_3^4],$$

$$\frac{\partial G_c}{\partial P_2} = 2\alpha_1 P_2 + 4\alpha_{11} P_2^3 + 2\alpha_{12} P_2 (P_1^2 + P_3^2)$$
$$+ 6\alpha_{111} P_2^5 + 2\alpha_{112} P_2 [(P_1^4 + P_3^4) + 2P_2^2 (P_1^2 + 4P_3^2)] + 2\alpha_{123} P_2 P_1^2 P_3^2$$
$$+ 8\alpha_{1111} P_2^7 + 2\alpha_{1112} P_2 [3P_2^4 (P_1^2 + P_3^2) + (P_1^6 + P_3^6)]$$
$$+ 4\alpha_{1122} P_2^3 (P_1^4 + P_3^4) + 2\alpha_{1123} P_2 (2P_1^2 P_2^2 P_3^2 + P_1^4 P_3^2 + P_1^2 P_3^4),$$

$$\frac{\partial G_c}{\partial P_3} = 2\alpha_2 P_3 + 4\alpha_{11} P_3^3 + 2\alpha_{12} P_3 (P_1^2 + P_2^2)$$
$$+ 6\alpha_{111} P_3^5 + 2\alpha_{112} P_3 [(P_1^4 + P_2^4) + 2P_3^2 (P_1^2 + 4P_2^2)] + 2\alpha_{123} P_3 P_1^2 P_2^2$$
$$+ 8\alpha_{1111} P_3^7 + 2\alpha_{1112} P_3 [3P_3^4 (P_1^2 + P_2^2) + (P_1^6 + P_2^6)]$$
$$+ 4\alpha_{1122} P_3^3 (P_1^4 + P_2^4) + 2\alpha_{1123} P_3 (2P_1^2 P_2^2 P_3^2 + P_1^4 P_2^2 + P_1^2 P_2^4)$$

［正］

$$\frac{\partial G_c}{\partial P_1} = 2\alpha_1 P_1 + 4\alpha_{11} P_1^3 + 2\alpha_{12} P_1 (P_2^2 + P_3^2)$$
$$+ 6\alpha_{111} P_1^5 + 2\alpha_{112} P_1 [(P_2^4 + P_3^4) + 2P_1^2 (P_2^2 + P_3^2)] + 2\alpha_{123} P_1 P_2^2 P_3^2$$
$$+ 8\alpha_{1111} P_1^7 + 2\alpha_{1112} P_1 [3P_1^4 (P_2^2 + P_3^2) + (P_2^6 + P_3^6)]$$
$$+ 4\alpha_{1122} P_1^3 (P_2^4 + P_3^4) + 2\alpha_{1123} P_1 (2P_1^2 P_2^2 P_3^2 + P_2^4 P_3^2 + P_2^2 P_3^4),$$

$$\frac{\partial G_c}{\partial P_2} = 2\alpha_1 P_2 + 4\alpha_{11} P_2^3 + 2\alpha_{12} P_2 (P_1^2 + P_3^2)$$
$$+ 6\alpha_{111} P_2^5 + 2\alpha_{112} P_2 [(P_1^4 + P_3^4) + 2P_2^2 (P_1^2 + P_3^2)] + 2\alpha_{123} P_2 P_1^2 P_3^2$$
$$+ 8\alpha_{1111} P_2^7 + 2\alpha_{1112} P_2 [3P_2^4 (P_1^2 + P_3^2) + (P_1^6 + P_3^6)]$$
$$+ 4\alpha_{1122} P_2^3 (P_1^4 + P_3^4) + 2\alpha_{1123} P_2 (2P_1^2 P_2^2 P_3^2 + P_1^4 P_3^2 + P_1^2 P_3^4),$$

$$\frac{\partial G_c}{\partial P_3} = 2\alpha_1 P_3 + 4\alpha_{11} P_3^3 + 2\alpha_{12} P_3 (P_1^2 + P_2^2)$$
$$+ 6\alpha_{111} P_3^5 + 2\alpha_{112} P_3 [(P_1^4 + P_2^4) + 2P_3^2 (P_1^2 + P_2^2)] + 2\alpha_{123} P_3 P_1^2 P_2^2$$
$$+ 8\alpha_{1111} P_3^7 + 2\alpha_{1112} P_3 [3P_3^4 (P_1^2 + P_2^2) + (P_1^6 + P_2^6)]$$
$$+ 4\alpha_{1122} P_3^3 (P_1^4 + P_2^4) + 2\alpha_{1123} P_3 (2P_1^2 P_2^2 P_3^2 + P_1^4 P_2^2 + P_1^2 P_2^4)$$

更新情報

［旧］9 ページ　4行目

http://tkoyama.web.nitech.ac.jp/Phase-Field_Modeling.htm

［新］

http://www.material.nagoya-u.ac.jp/PFM/Phase-Field_Modeling.htm

［旧］37 ページ　下から 6 行目

http://www.shoko-do.co.jp/

［新］

http://pub.maruzen.co.jp/space/lecturecourse/phase-field

［旧］38 ページ　6 行目

http://tkoyama.web.nitech.ac.jp/Phase-Field_Modeling.htm

［新］

http://www.material.nagoya-u.ac.jp/PFM/Phase-Field_Modeling.htm