

表 7.1 計算に用いたパラメータ。AはSi、BはAlを表している。

$D_L(\text{cm}^2/\text{s})$	$3.0 \times 10^{-5}$
$D_S(\text{cm}^2/\text{s})$	$1.0 \times 10^{-8}$
$v_m(\text{cm}^3)$	10
$L_A(\text{J}/\text{cm}^3)$	3000
$T_m^A(\text{K})$	1675.4
$\beta^A(\text{cm}/(\text{Ks}))$	0.39
$\sigma^A(\text{J}/\text{cm}^2)$	$8.67 \times 10^{-5}$
$L_B(\text{J}/\text{cm}^3)$	4000
$T_m^B(\text{K})$	666.79
$\beta^B(\text{cm}/(\text{Ks}))$	0.70
$\sigma^B(\text{J}/\text{cm}^2)$	$1.9 \times 10^{-5}$
$\Delta x(\text{cm})$	$4.6 \times 10^{-7}$
$\Delta y(\text{cm})$	$\Delta x = 4.6 \times 10^{-7}$
$\delta_A(\text{cm})$	$\frac{\Delta x}{0.94} = 4.9 \times 10^{-7}$
$\delta_B(\text{cm})$	$\frac{\Delta x}{0.94} = 4.9 \times 10^{-7}$
$\Delta t(\text{s})$	$\frac{\Delta x^2}{5D_L} = 1.41 \times 10^{-9}$
$\gamma$	0.04
$k$	4
$\alpha$	0

表 7.2 波長  $\lambda$ 、振幅 A と実験時間条件

$\lambda$ ( $\mu\text{m}$ )	2.35	4.7	9.4	18.8
$A$ ( $\mu\text{m}$ )	0.84	0.84	0.84	0.84
	1.26	1.26	1.26	1.26
	1.68	1.68	1.68	1.68
	2.1	2.1	2.1	2.1
	2.52	2.52	2.52	2.52

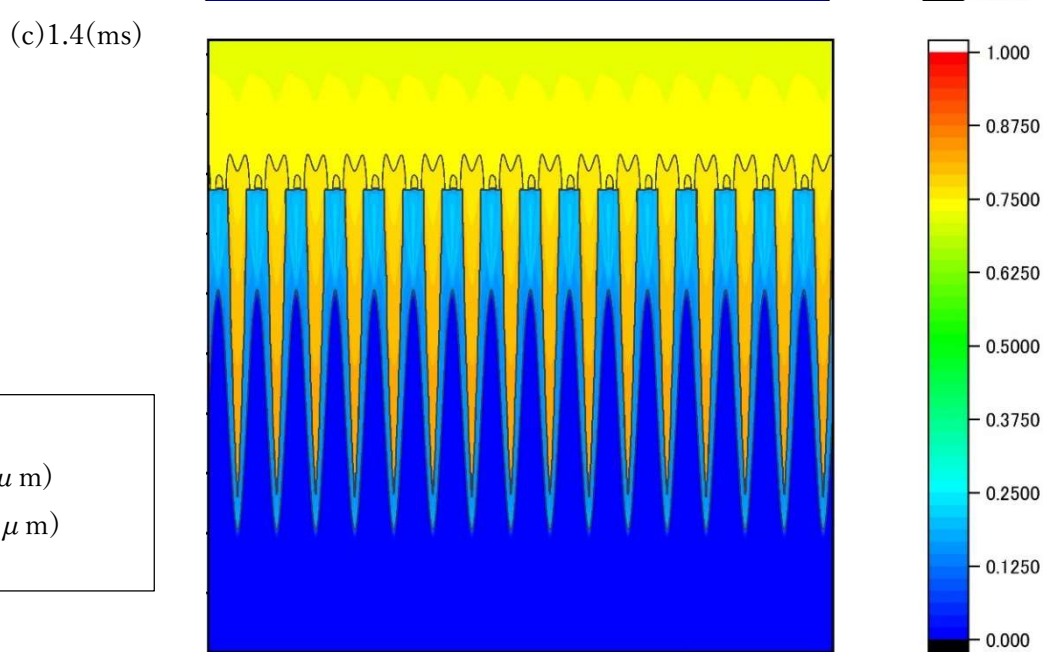
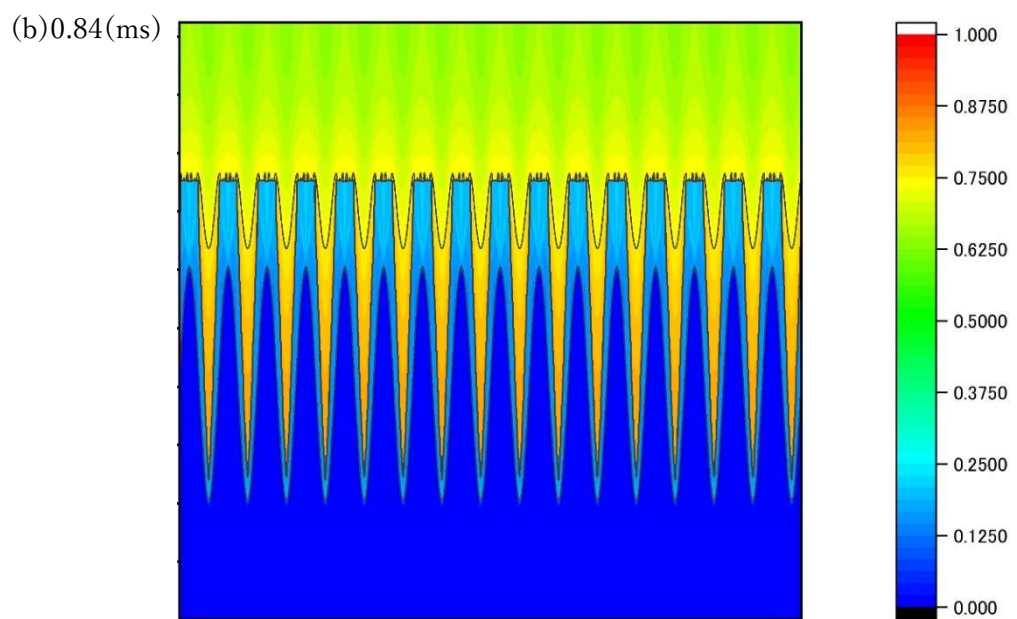
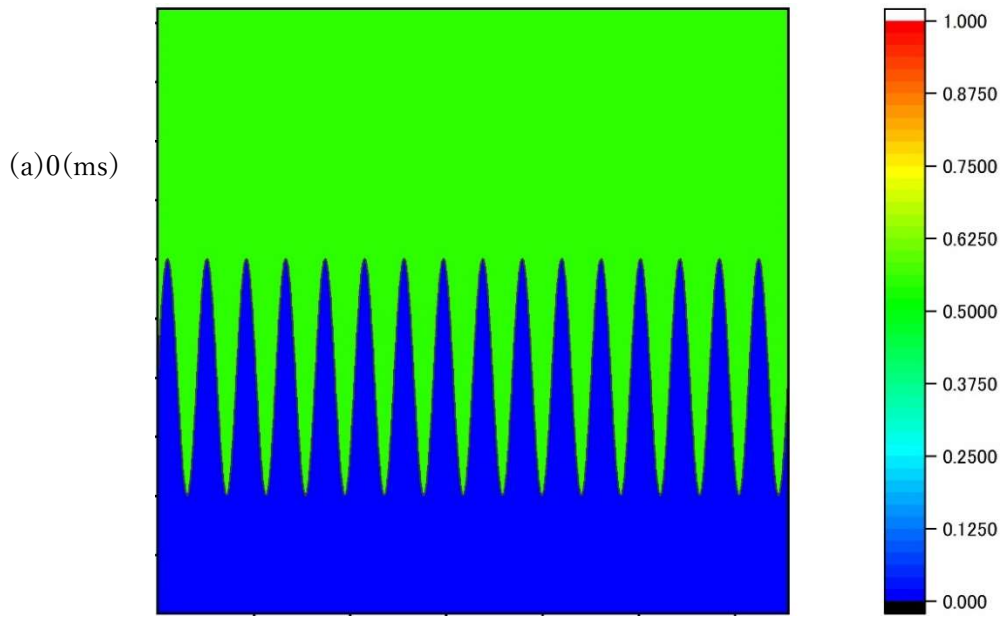


图 7.3  
 $\lambda = 4.7(\mu\text{m})$   
 $A = 1.68(\mu\text{m})$

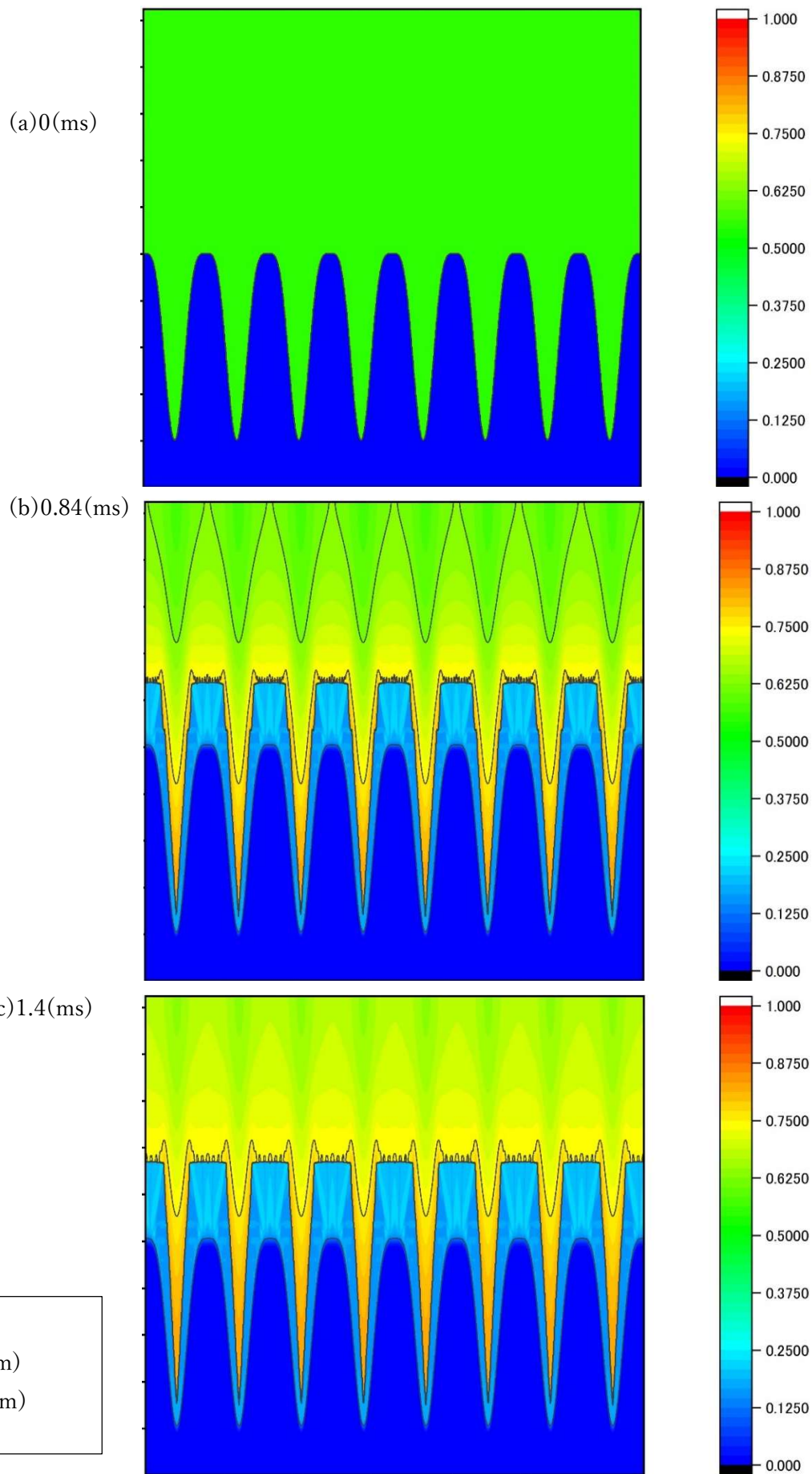
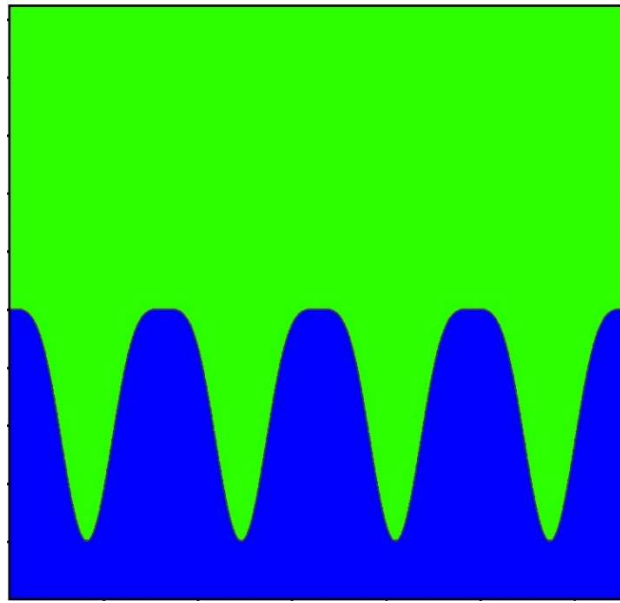


图 7.4

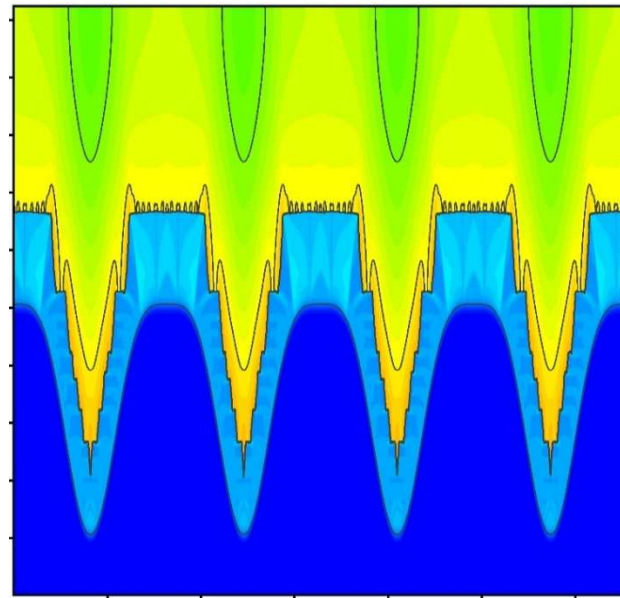
$\lambda = 9.4(\mu\text{m})$

$A = 1.68(\mu\text{m})$

(a) 0(ms)



(b) 0.84(ms)



(c) 1.4(ms)

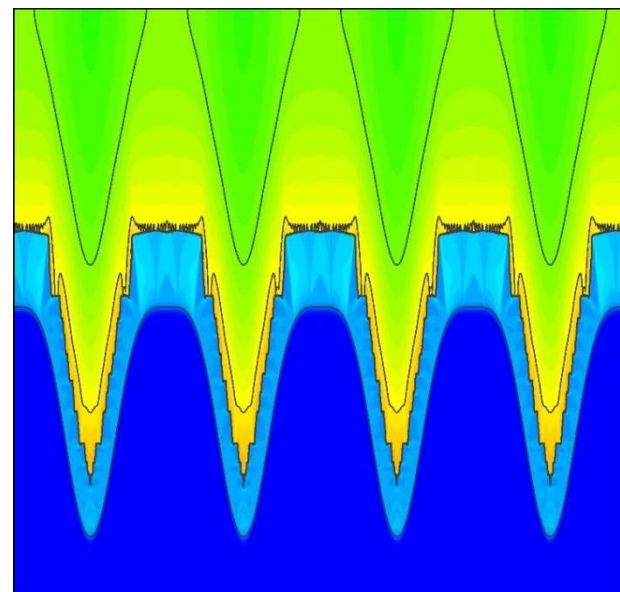


図 7.5

$\lambda = 18.8 (\mu\text{m})$

$A = 1.68 (\mu\text{m})$

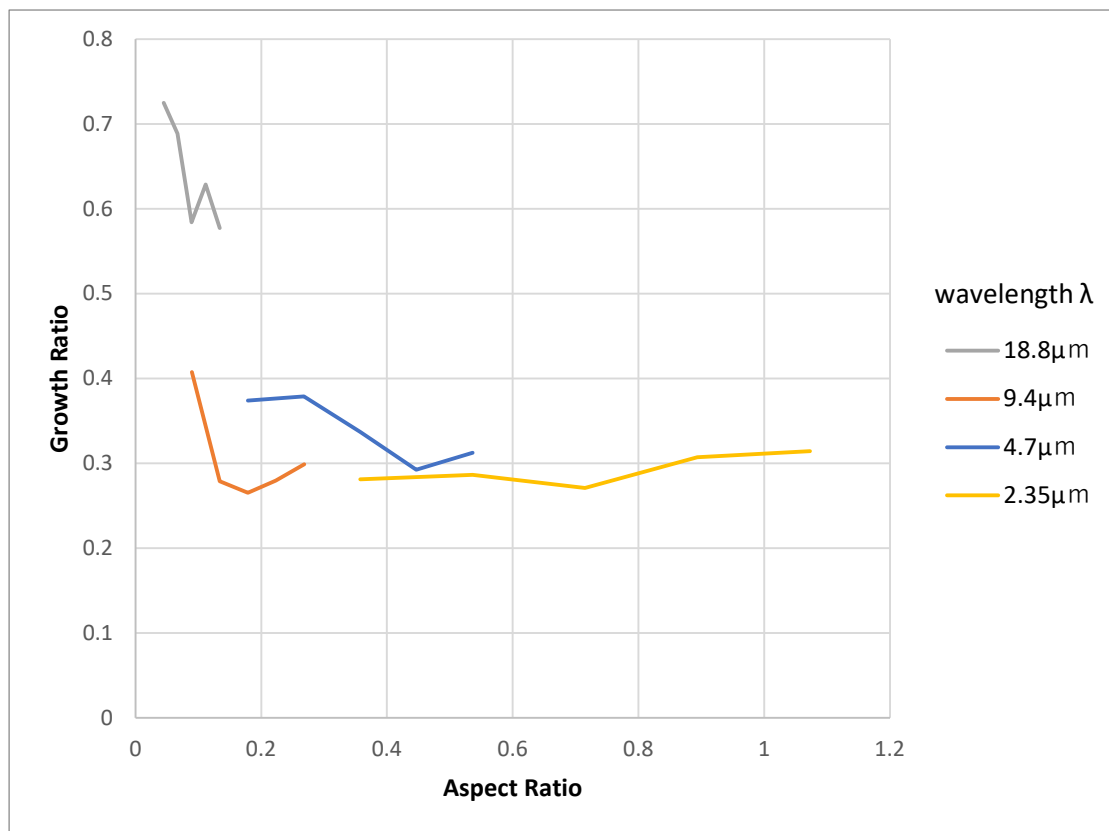


図 7.6 Growth ratio とアスペクト比の関係

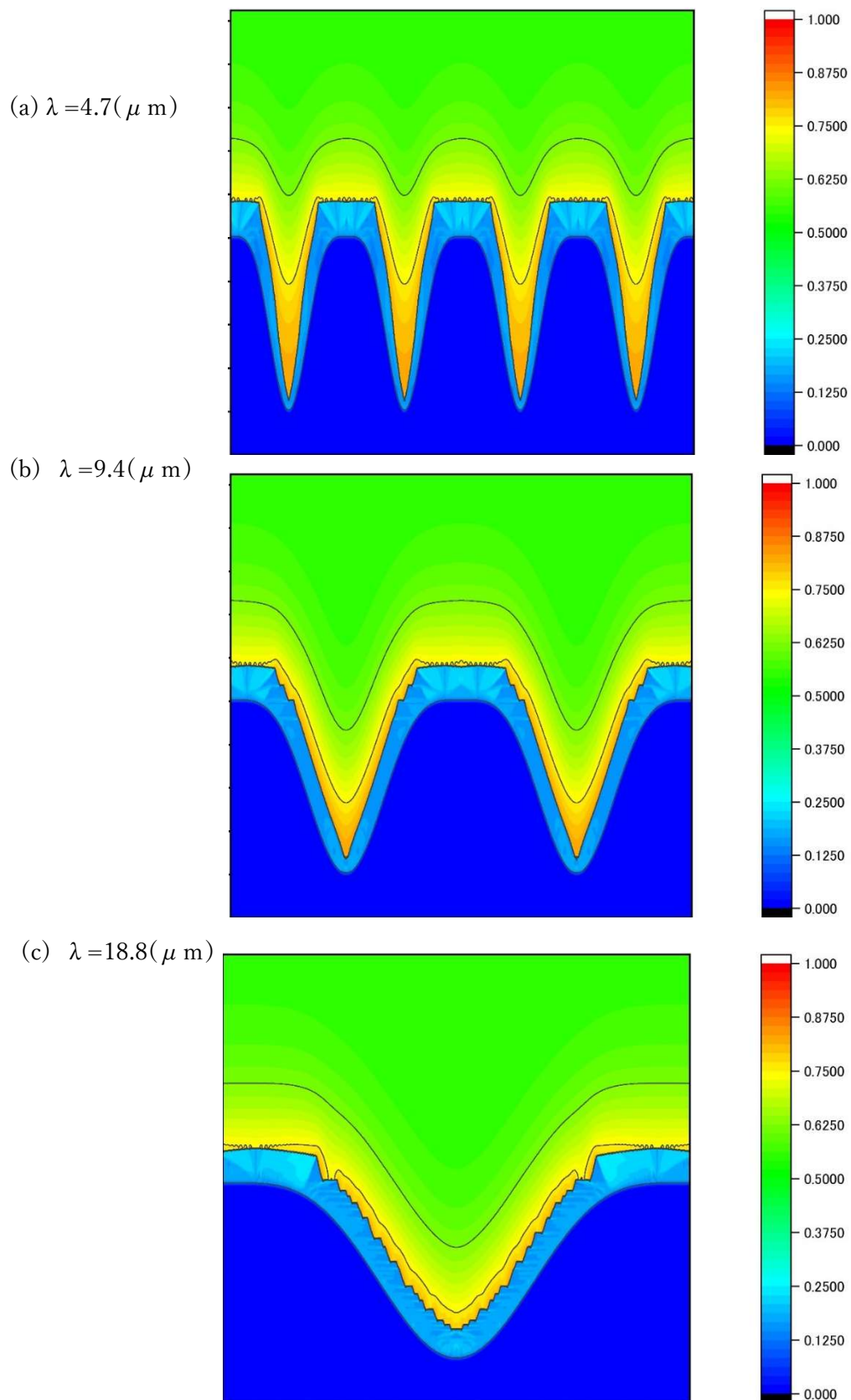


図 7.7 1.4 (ms) 経過後の Al の濃度分布 ( $A=1.68 \mu\text{m}$ )

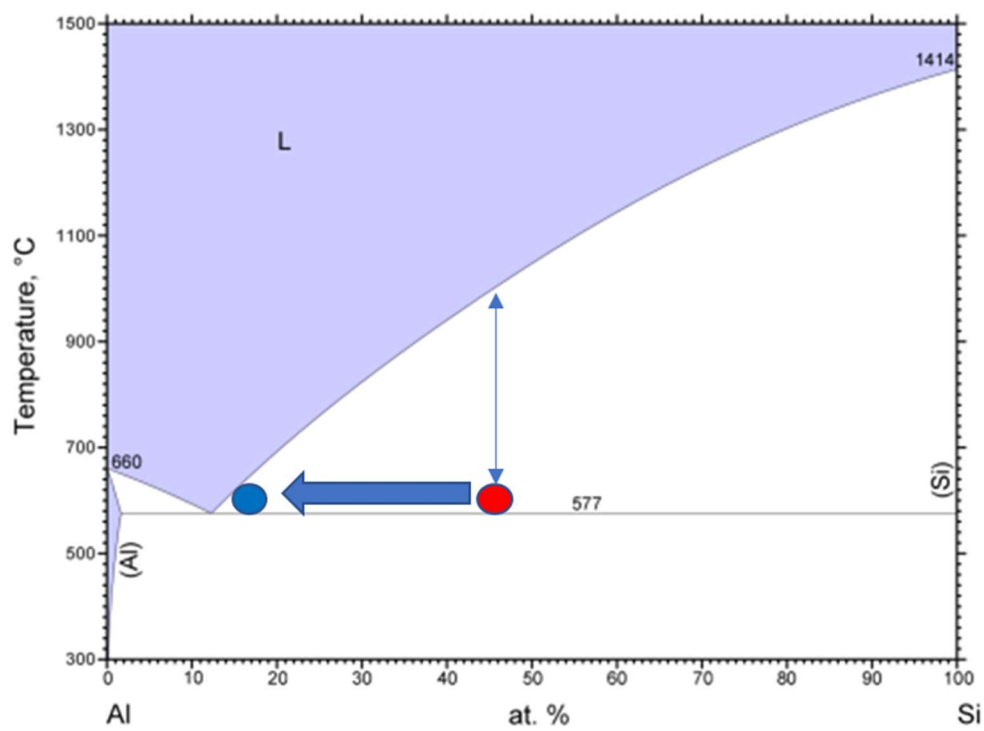


図 7.8 Si-Al 二元系状態図。赤丸は Al 濃縮が起こらない時の状態、青丸は Al 濃縮が起きた時の状態を示す。