[Fig. 1]

FIG. 1A

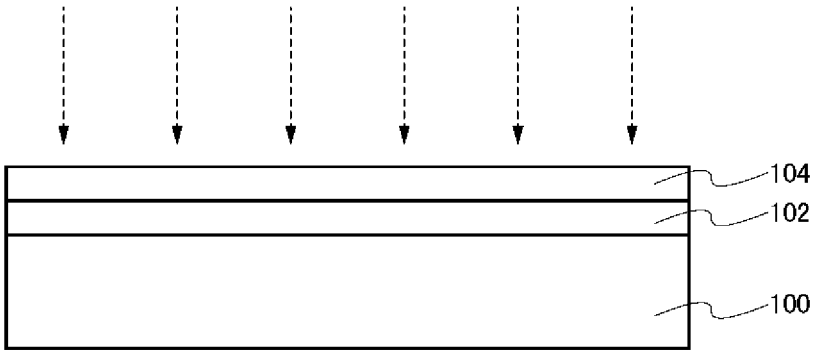
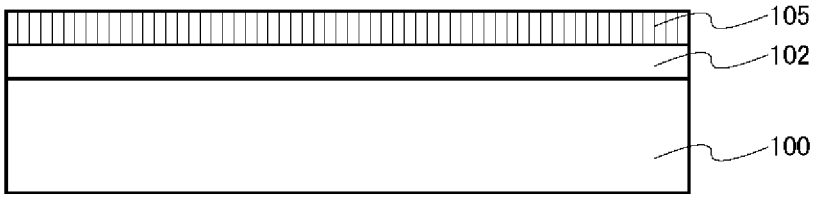


FIG. 1B



[Fig. 2]

FIG. 2A

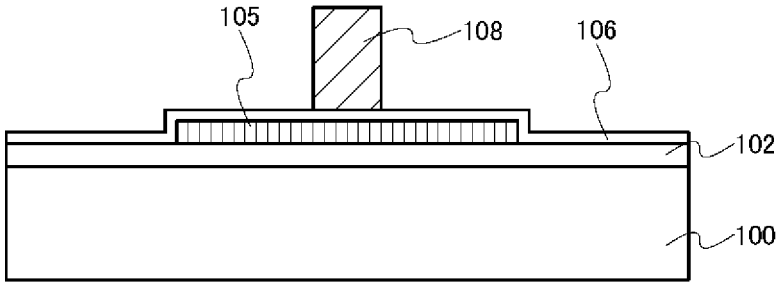


FIG. 2B

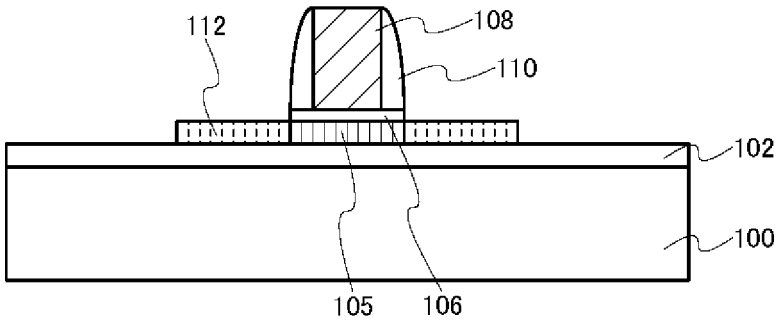
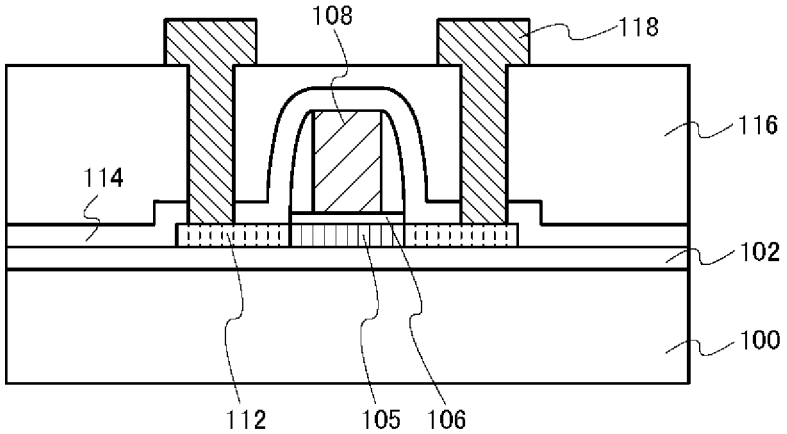


FIG. 2C



[Fig. 3]

FIG. 3A

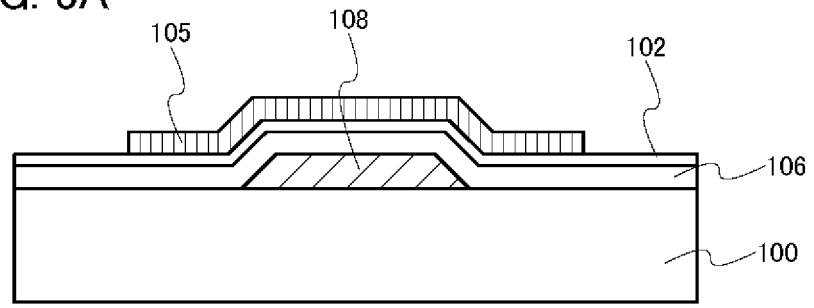
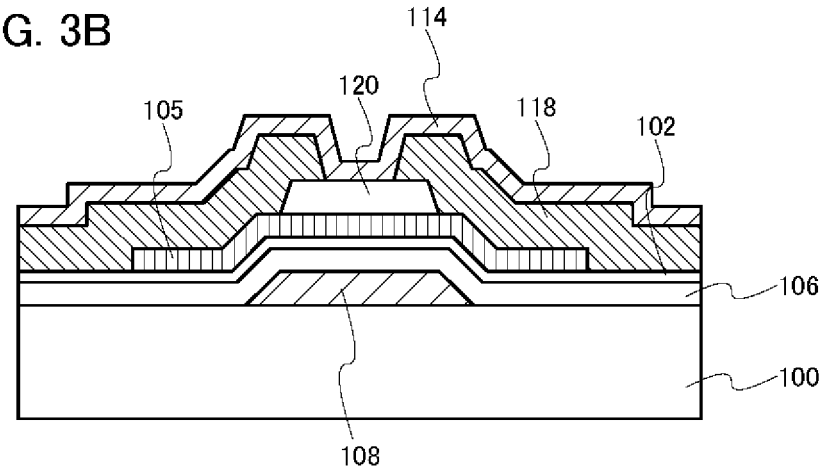
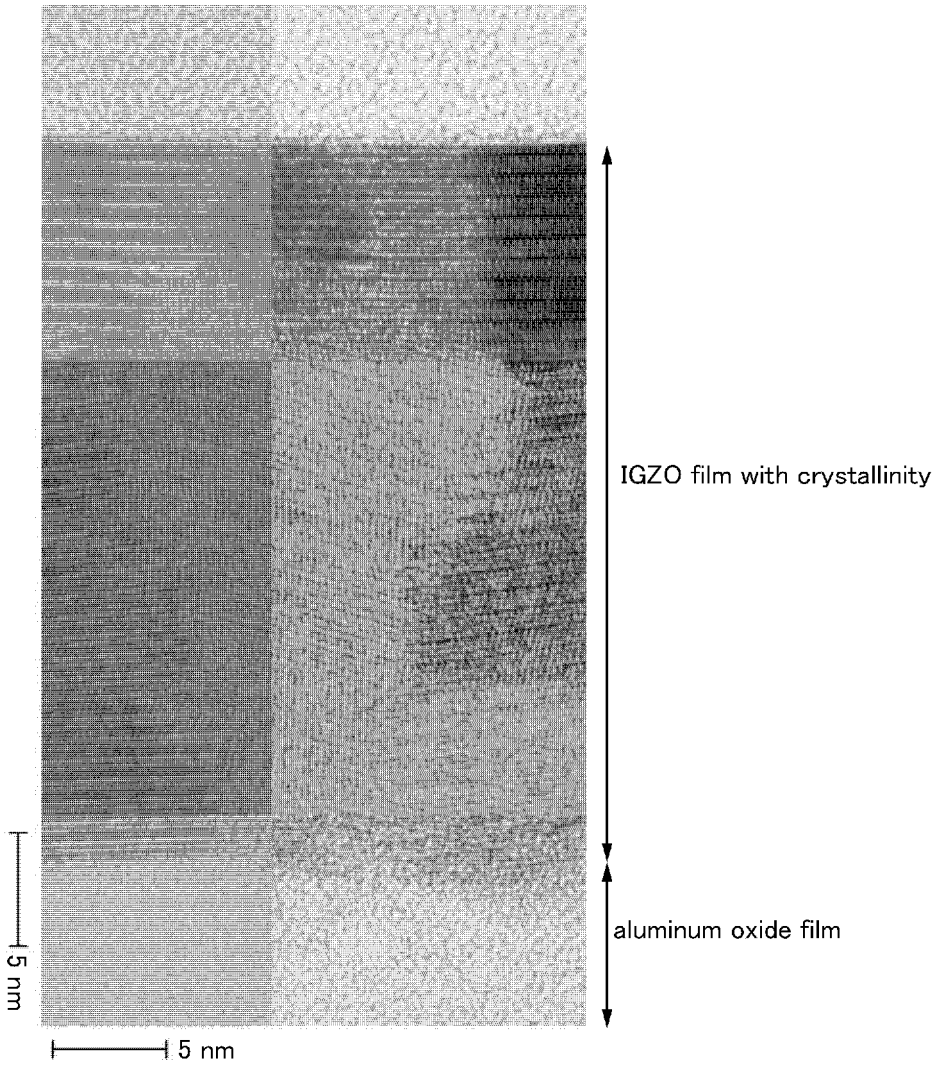


FIG. 3B



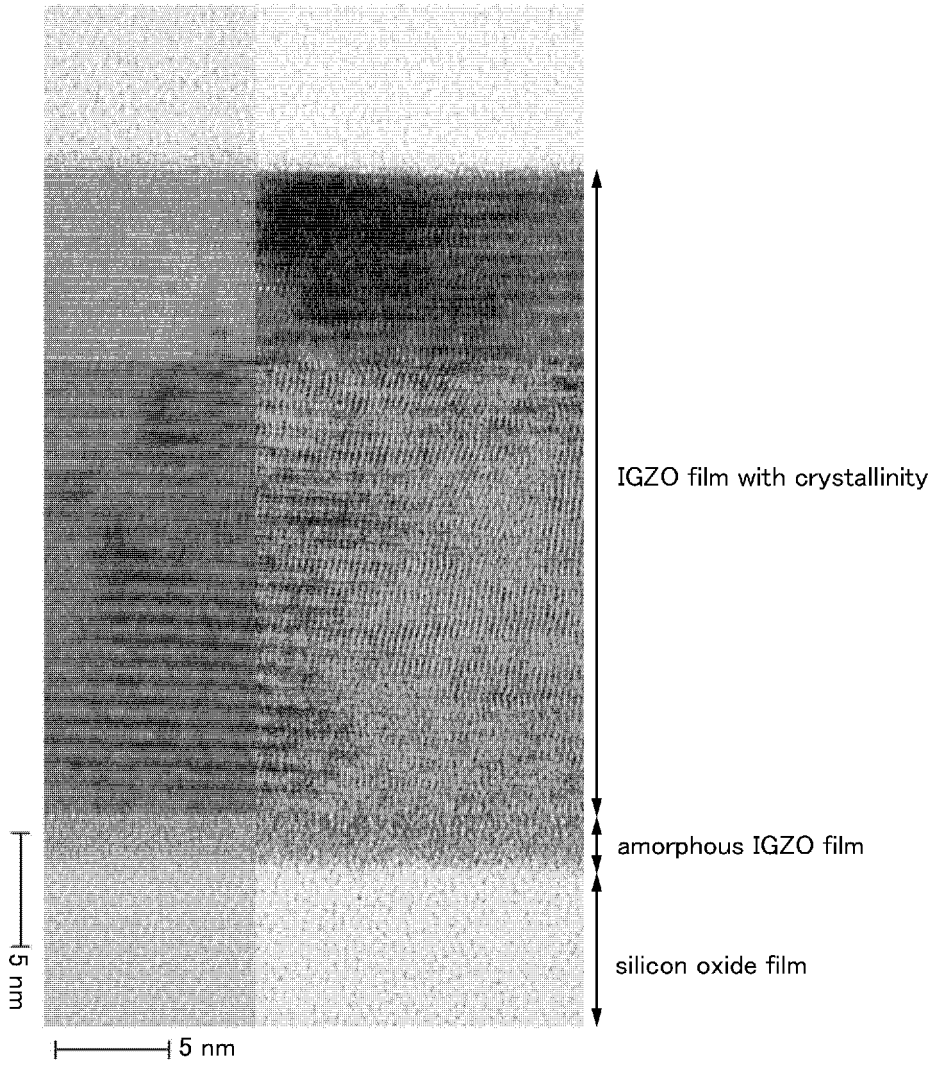
[Fig. 4]

FIG. 4



[Fig. 5]

FIG. 5


IGZO film with crystallinity
amorphous IGZO film
silicon oxide film
5 nm
5 nm

[Fig. 6]

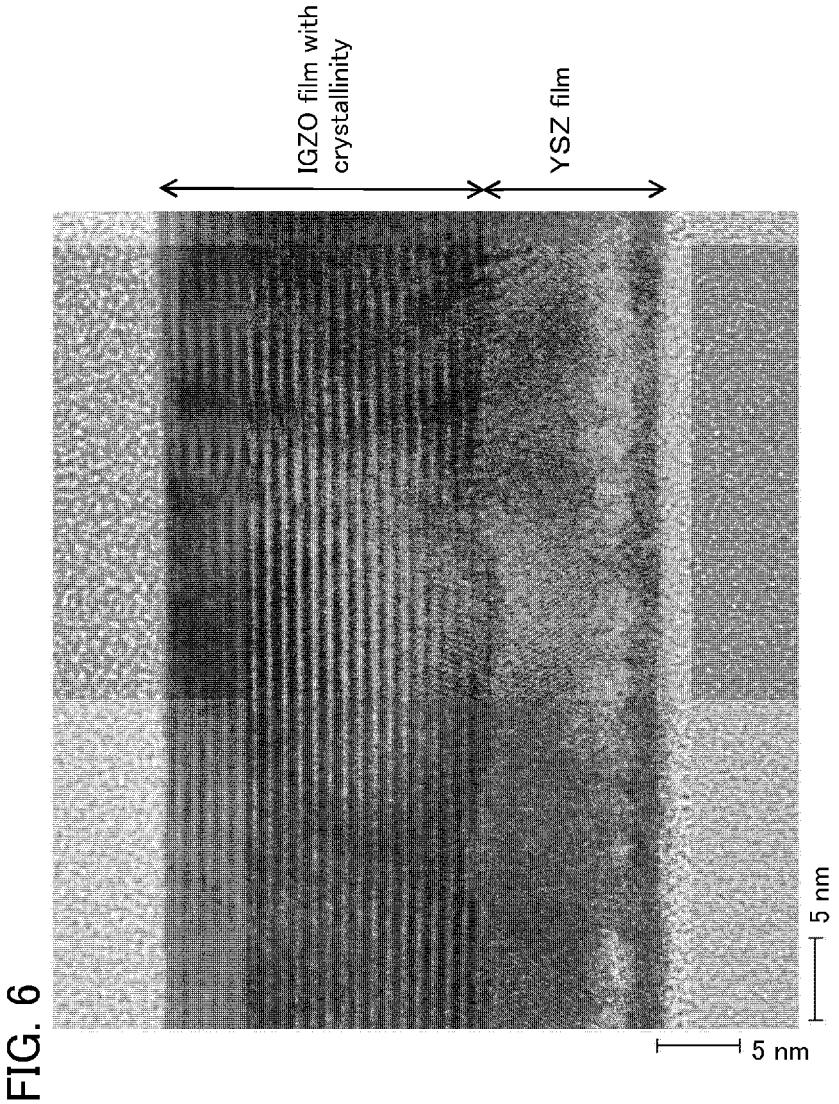


FIG. 6

[Fig. 7]

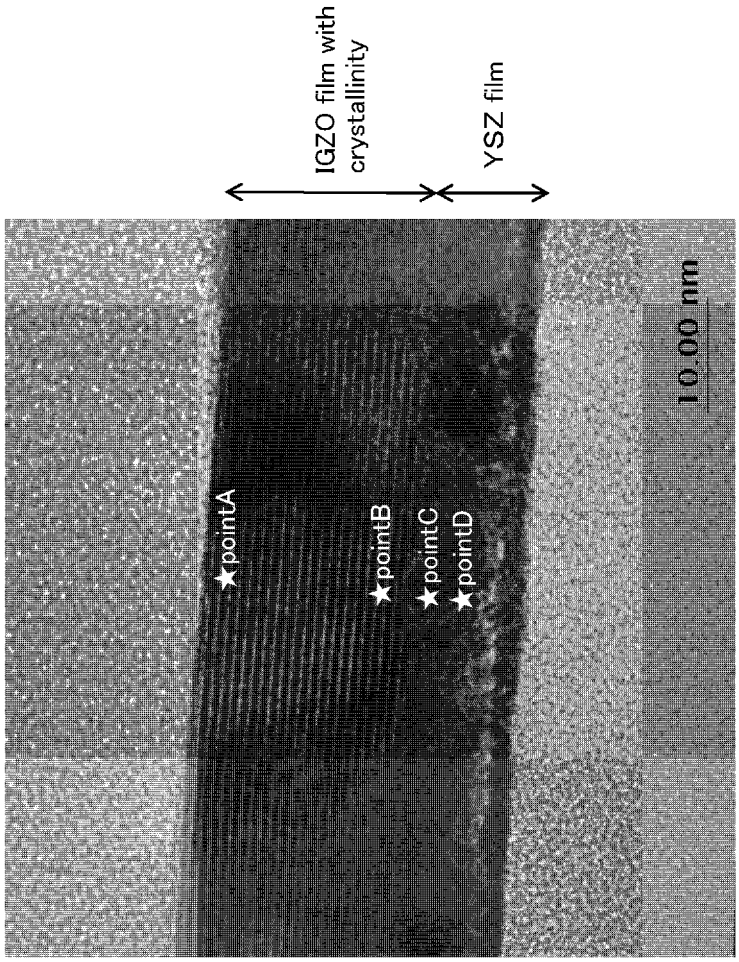

IGZO film with crystallinity
YSZ film
pointA
pointB
pointC
pointD
10.00 nm

FIG. 7

[Fig. 8]

FIG. 8A

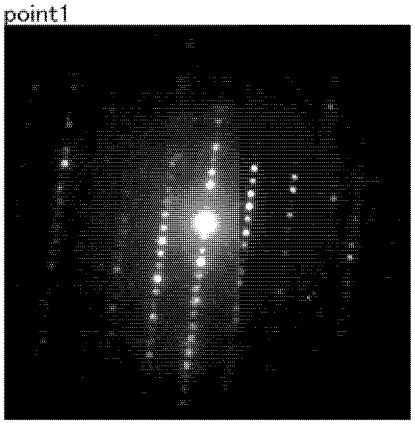


FIG. 8B

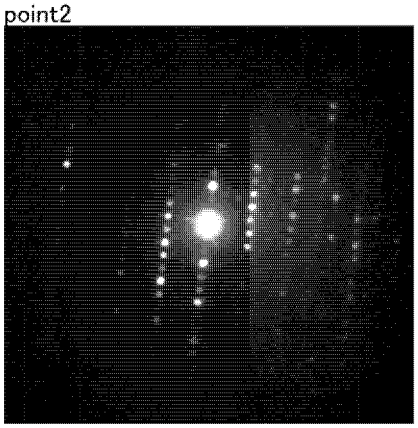


FIG. 8C

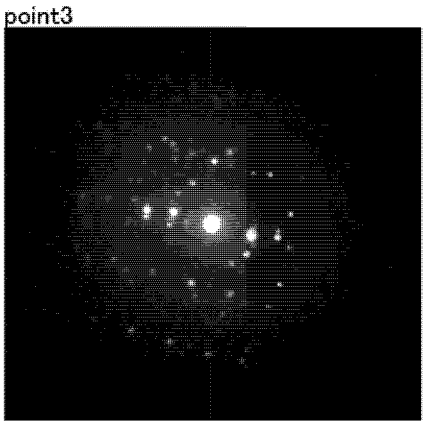
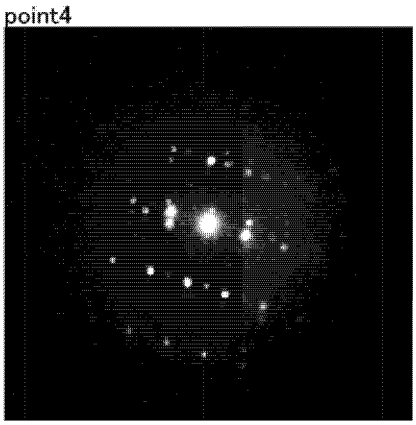
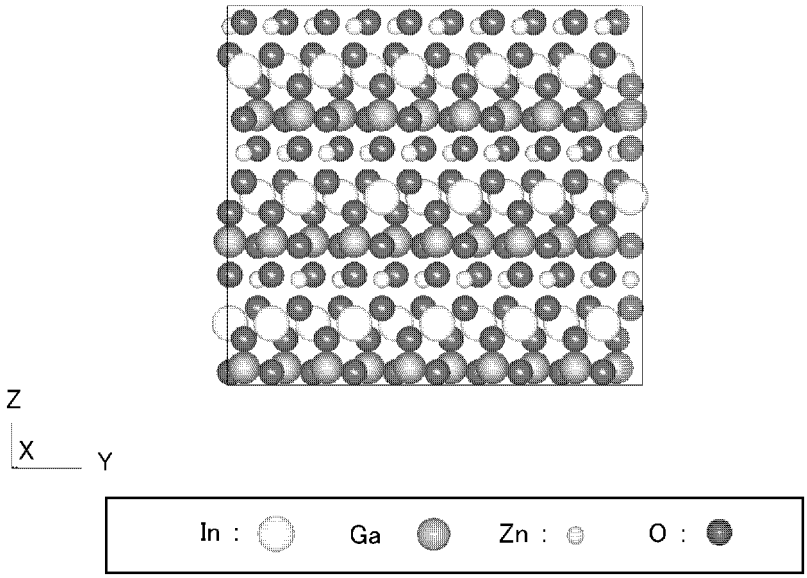


FIG. 8D



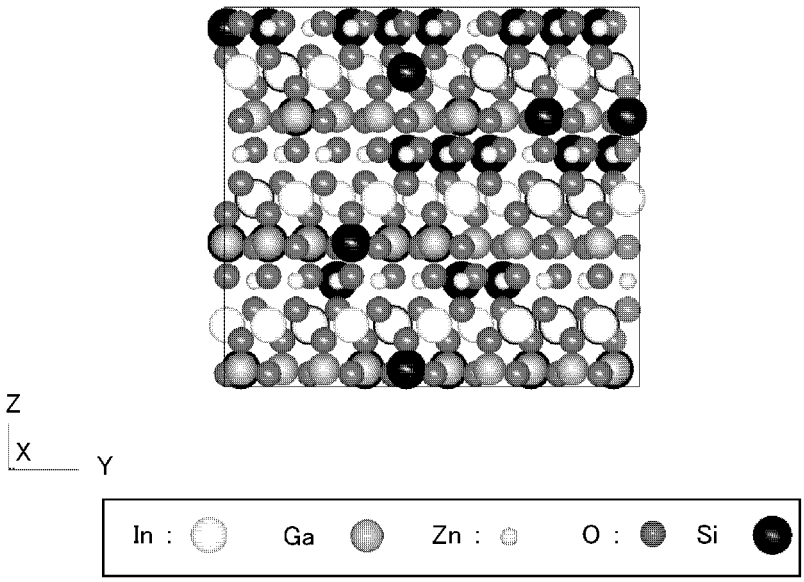
[Fig. 9]

FIG. 9



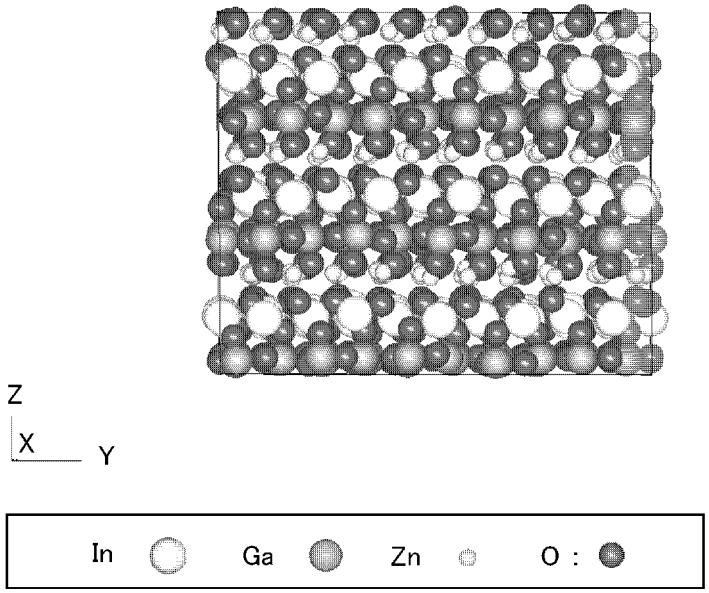
[Fig. 10]

FIG. 10



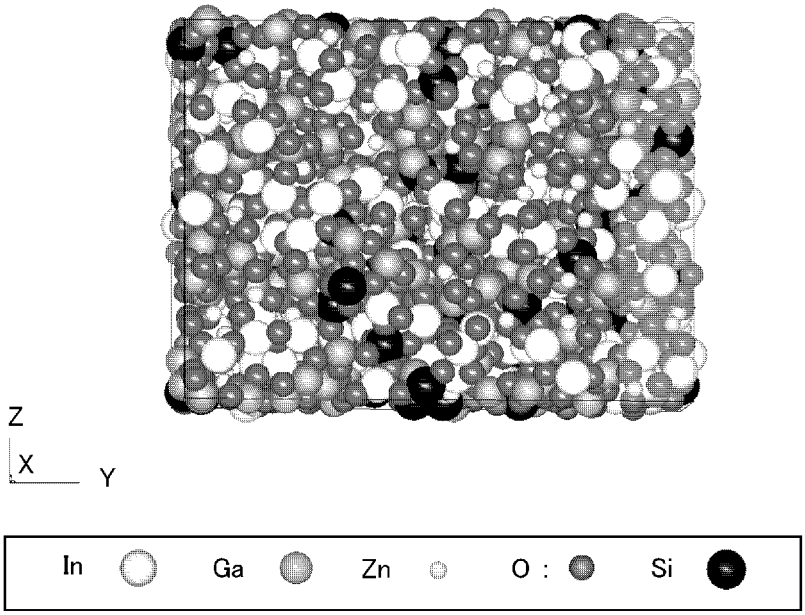
[Fig. 11]

FIG. 11



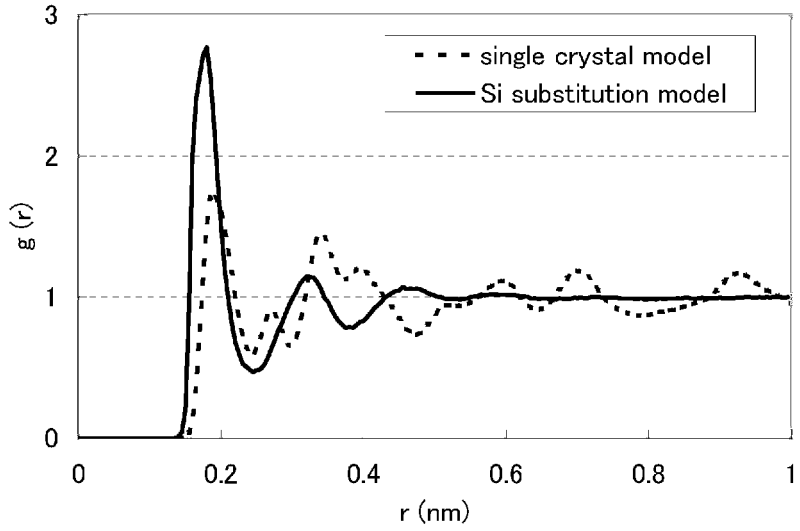
[Fig. 12]

FIG. 12



[Fig. 13]

FIG. 13


single crystal model
Si substitution model
g (r)
r (nm)
0
1
2
3
0
0.2
0.4
0.6
0.8
1