Supporting Information

for

Electrically Conductive Thermally Insulating Bi-Si Nanocomposites by Interface Design for Thermal Management

Yen-Ju Wu, Michiko Sasaki, Masahiro Goto, Lie Fang, Yibin Xu*

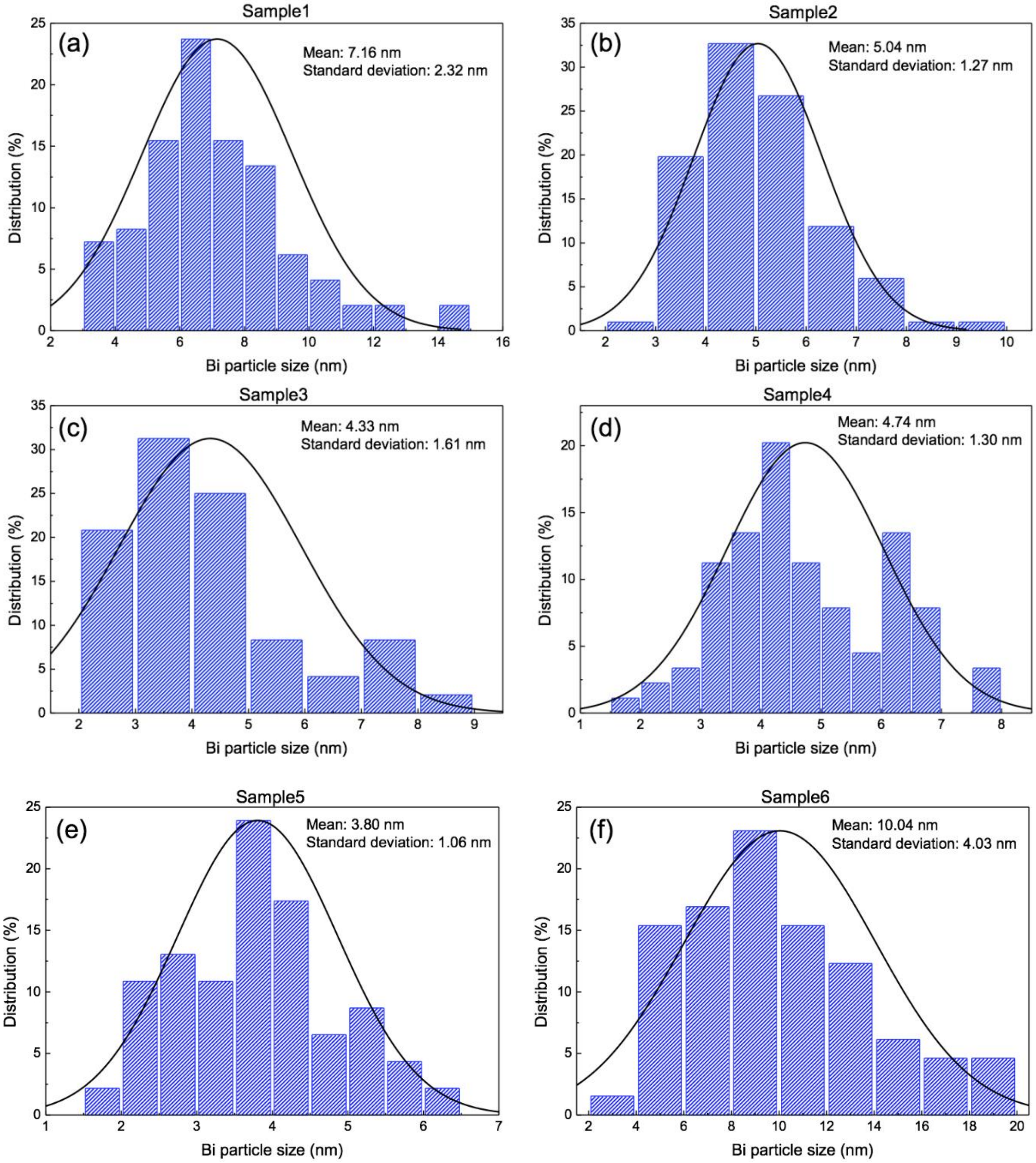
Center for Materials research by Information Integration (CMI2)

Research and Services Division of Materials Data and Integrated System (MaDIS)

National Institute for Materials Science (NIMS)

1-2-1 Sengen, Tsukuba, Ibaraki 305-0047, JAPAN

Email*: XU.Yibin@nims.go.jp


Sample1
(a)
Mean: 7.16 nm
Standard deviation: 2.32 nm
Distribution (%)
0
5
10
15
20
25
Bi particle size (nm)
2
4
6
8
10
12
14
16
Sample2
(b)
Mean: 5.04 nm
Standard deviation: 1.27 nm
Distribution (%)
0
5
10
15
20
25
30
35
Bi particle size (nm)
2
3
4
5
6
7
8
9
10
Sample3
(c)
Mean: 4.33 nm
Standard deviation: 1.61 nm
Distribution (%)
0
5
10
15
20
25
30
35
Bi particle size (nm)
2
3
4
5
6
7
8
9
Sample4
(d)
Mean: 4.74 nm
Standard deviation: 1.30 nm
Distribution (%)
0
5
10
15
20
Bi particle size (nm)
1
2
3
4
5
6
7
8
Sample5
(e)
Mean: 3.80 nm
Standard deviation: 1.06 nm
Distribution (%)
0
5
10
15
20
25
Bi particle size (nm)
1
2
3
4
5
6
7
Sample6
(f)
Mean: 10.04 nm
Standard deviation: 4.03 nm
Distribution (%)
0
5
10
15
20
25
Bi particle size (nm)
2
4
6
8
10
12
14
16
18
20

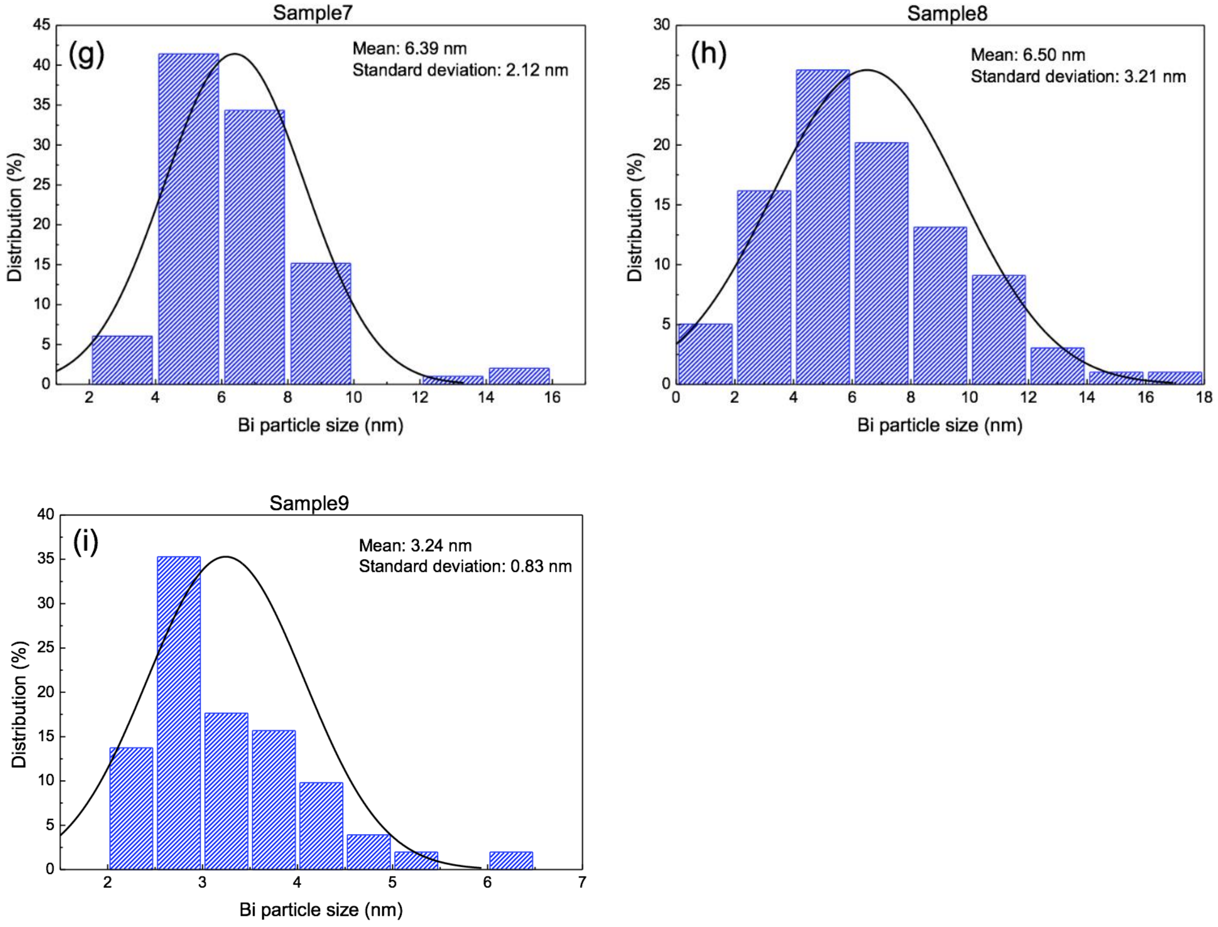


Figure S1

The statistical histograms for Bi particle distribution of (a) sample 1, (b) sample 2, (c) sample 3, (d) sample 4, (e) sample 5, (f) sample 6, (g) sample 7, (h) sample 8, and (i) sample 9. The mean and standard deviation are shown in the right top corner in each plot.

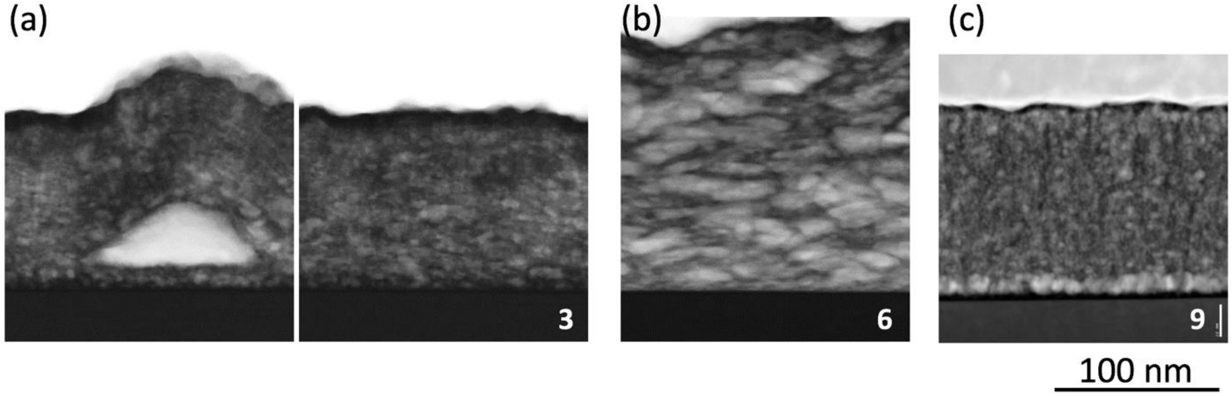


Figure S2

The dark-field STEM images of (a) sample 3, (b) sample 6, and (c) sample 9 with scale bar of 100 nm on the right bottom. The Bi has brighter colors in the dark-field images than the Si. The sample 3 used the undoped-Si target while the sample 6 and sample 9 used the B-doped Si target.