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## City St George's, University of London

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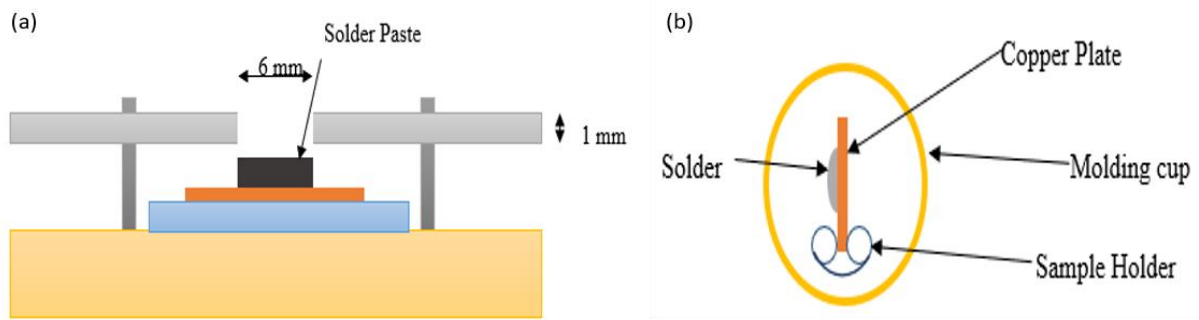
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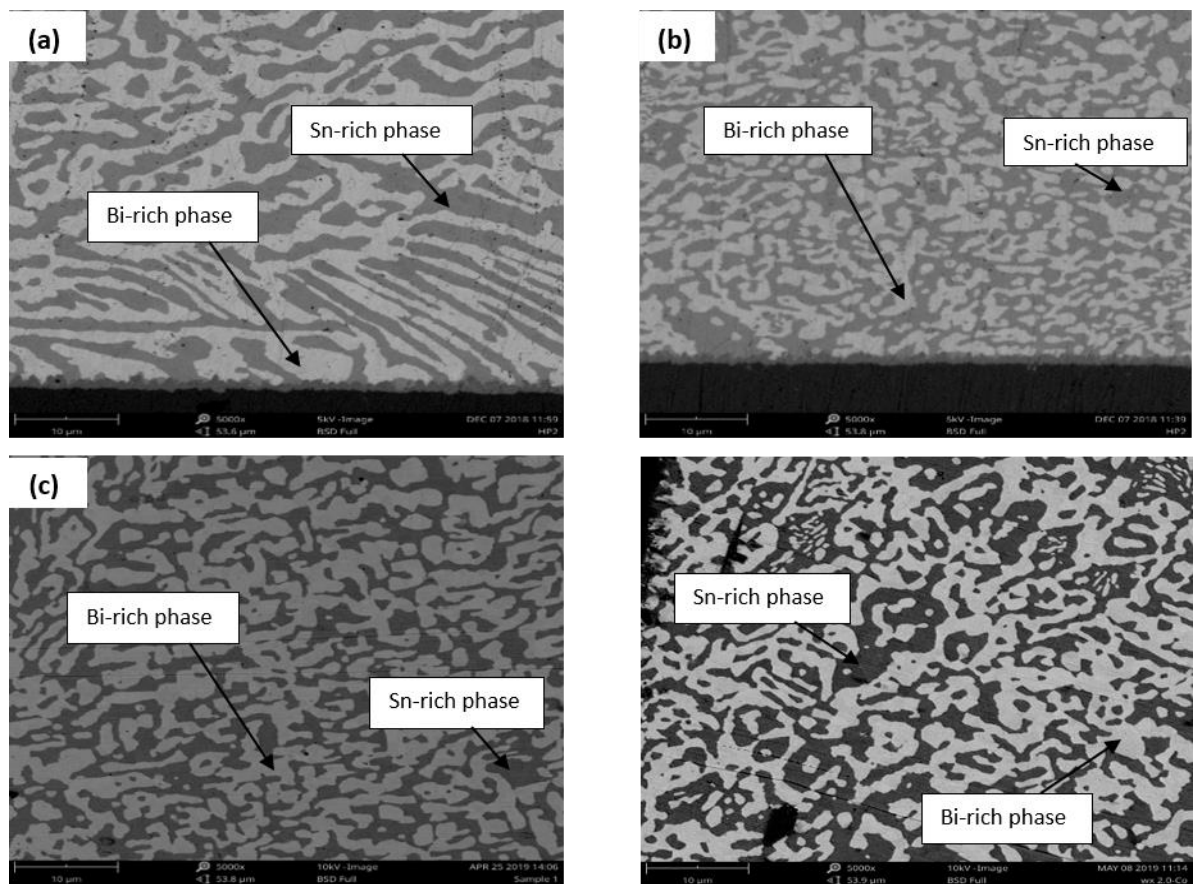
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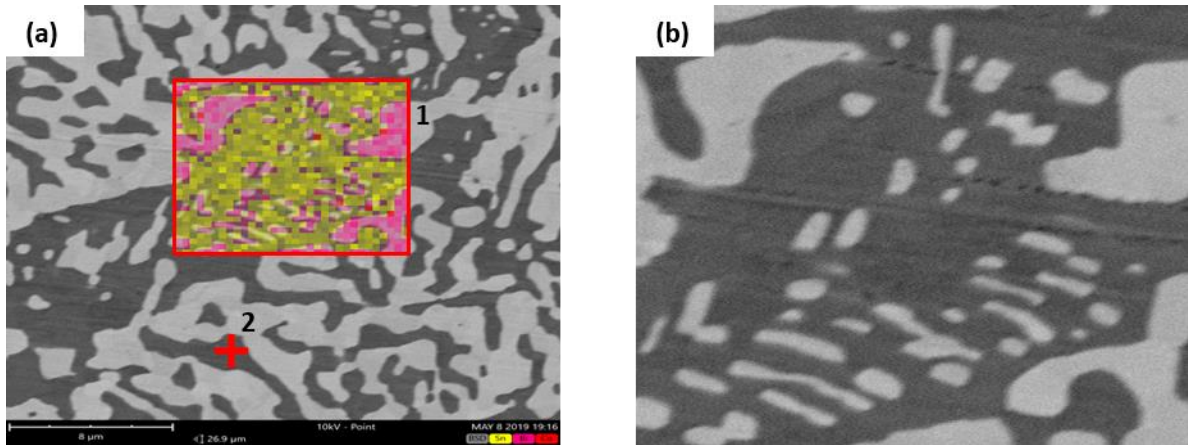
## Figures:



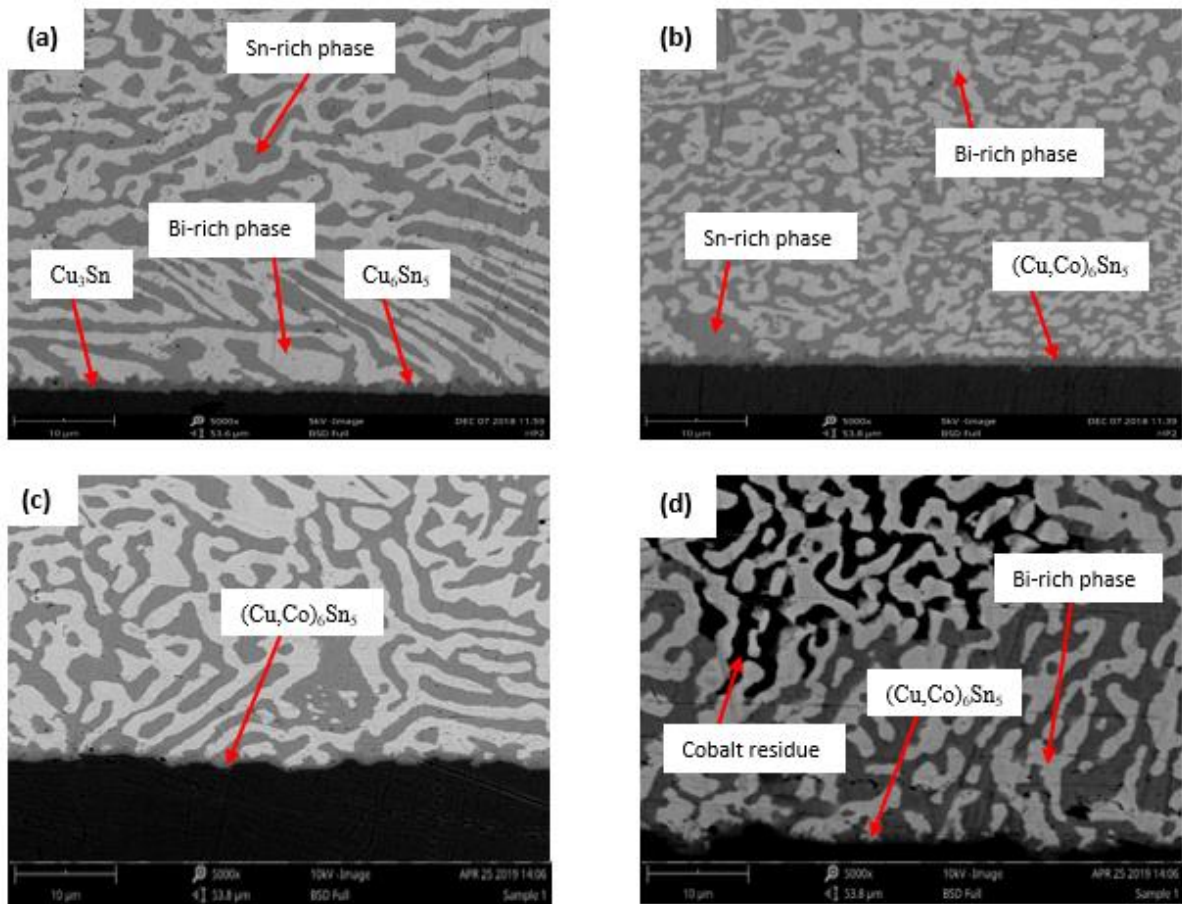
**Figure 1** Experimental procedure for the preparation of Sn-58Bi-xCo samples



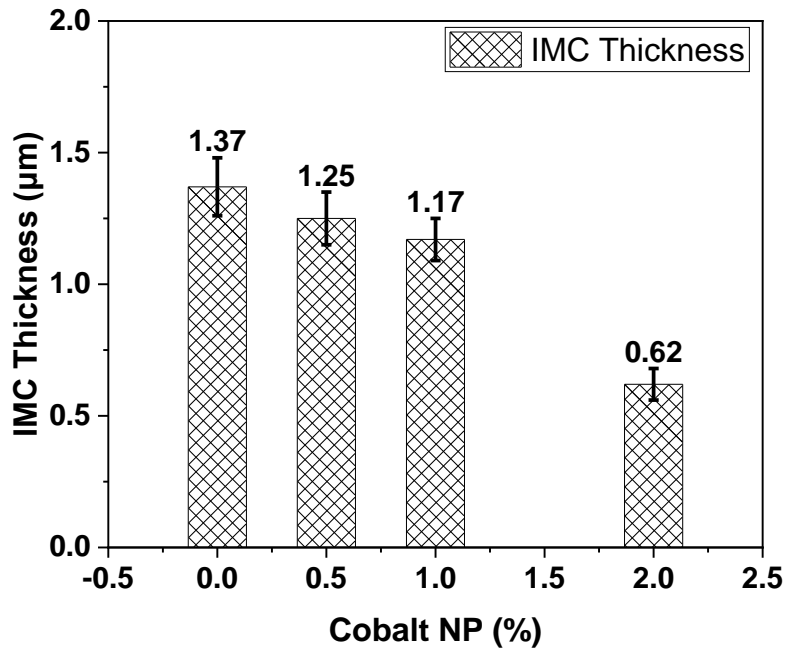
**Figure 2** SEM images of (a)Sn-58Bi, (b) Sn-58Bi-0.5Co, (c) Sn-58Bi-1Co, (d) Sn-58Bi-2Co, respectively.



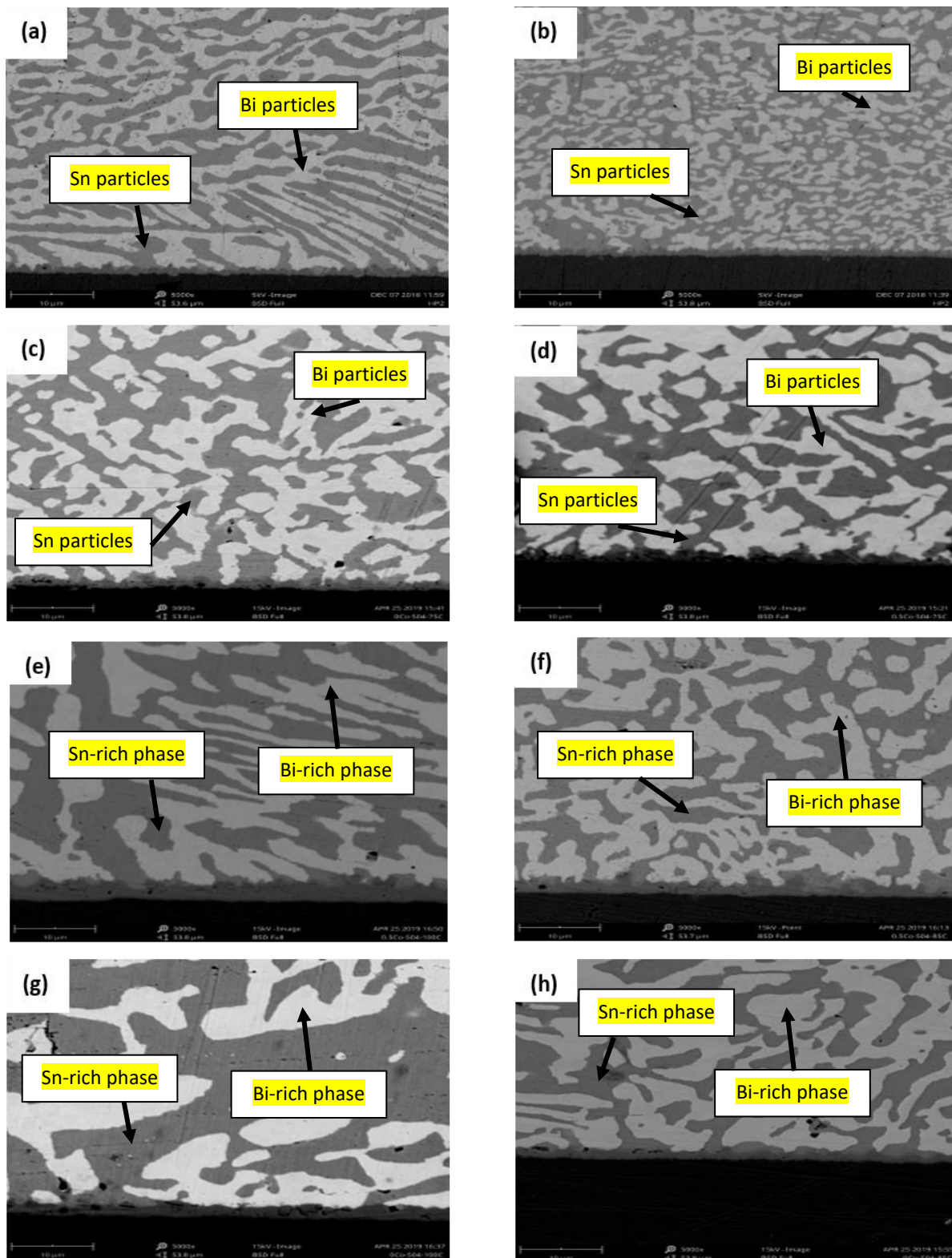
**Figure 3** (a) BSE cross-sectioned image of Sn-58Bi-2Co Solder Joint (b) colored area shown in (a)



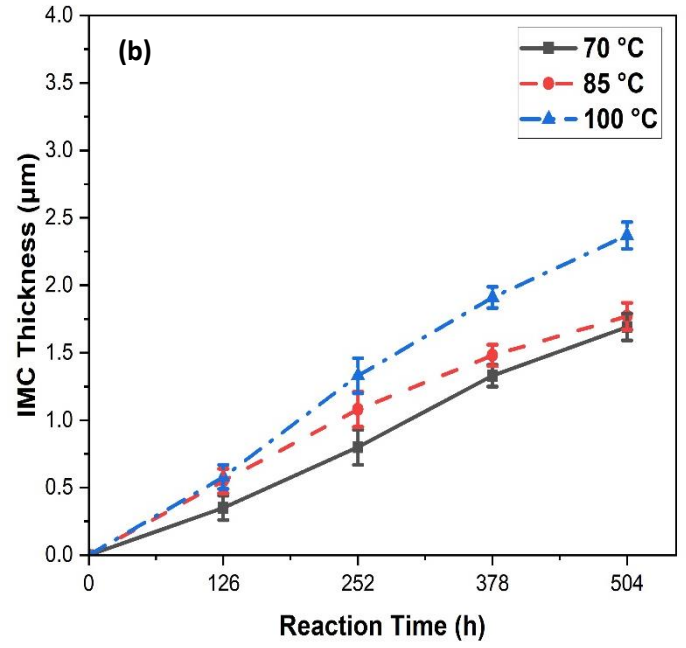
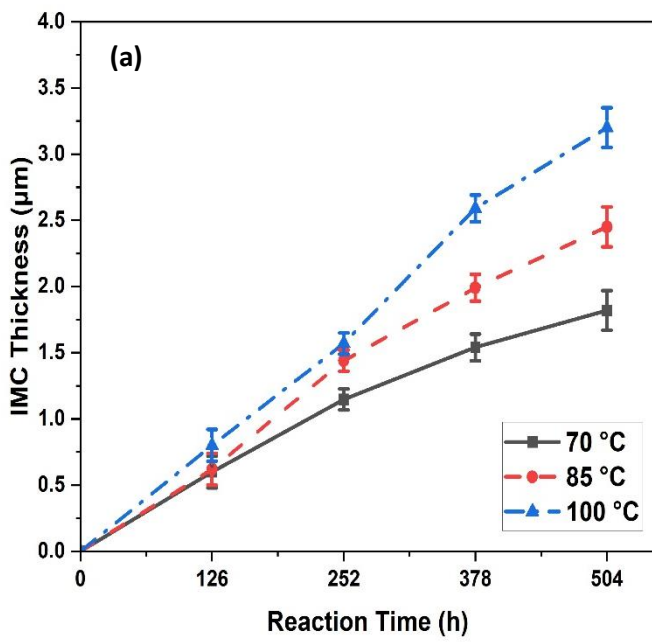
**Figure 4** SEM image of interfacial IMC thickness variation of Sn-58Bi with addition of (a) 0%, (b) 0.5%, (c) 1% and (d) 2% of Co-nanoparticle



**Figure 5** Thickness variation of Interfacial IMC before and after addition of cobalt nanoparticles



**Figure 6** SEM image of (a)Sn-58Bi and (b)Sn-58Bi-0.5Co without thermal aging, SEM image of Sn-58Bi-xCo after underwent thermal aging for 504 hours (c), (e), (g) 0%Co at 70, 85, 100°C respectively and (d), (f), (h) 0.5% Co at 70, 85, 100°C respectively



**Figure 7** IMC layer thicknesses (a) Sn-Bi and (b) Sn-Bi-0.5Co as function of reaction time at various temperatures.