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Citation: Bashir, M. N., Haseeb, A. S. M. A., Naher, S., Ali, M. M., Ali Bashir, M. B., Zaidi, A. A., Jamshaid, M. & Javed, I. (2023). Effects of cobalt nanoparticle on microstructure of Sn58Bi solder joint. *Journal of Materials Science: Materials in Electronics*, 34(4), 248. doi: 10.1007/s10854-022-09465-2

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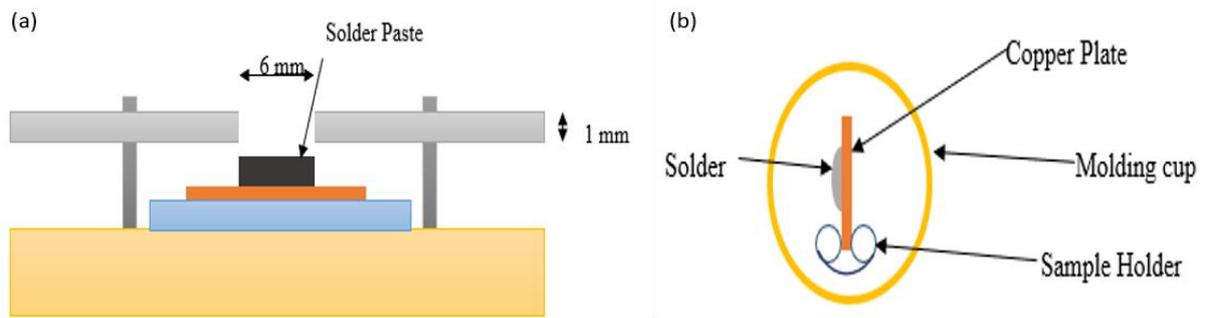


Figure 1 Experimental procedure for the preparation of Sn-58Bi-xCo samples

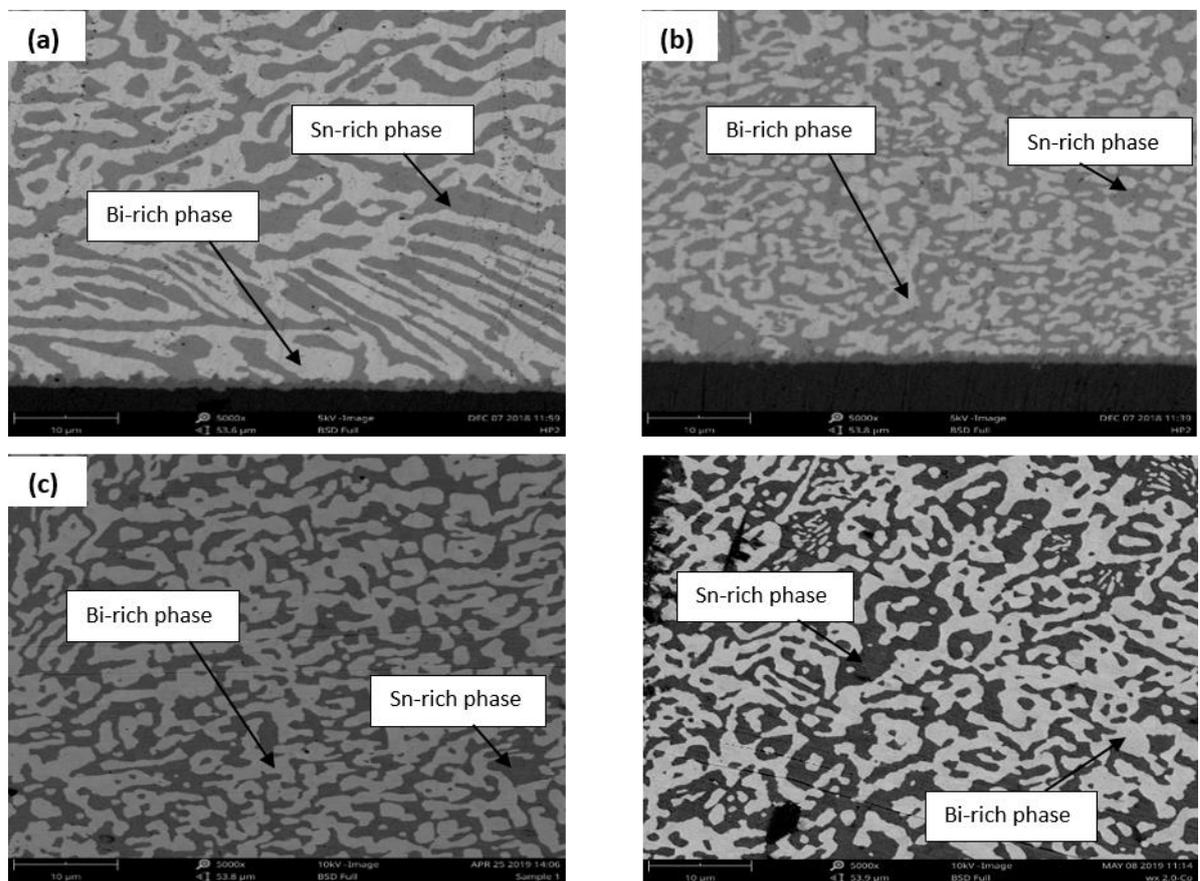


Figure 2 SEM images of (a) Sn-58Bi, (b) Sn-58Bi-0.5Co, (c) Sn-58Bi-1Co, (d) Sn-58Bi-2Co, respectively.

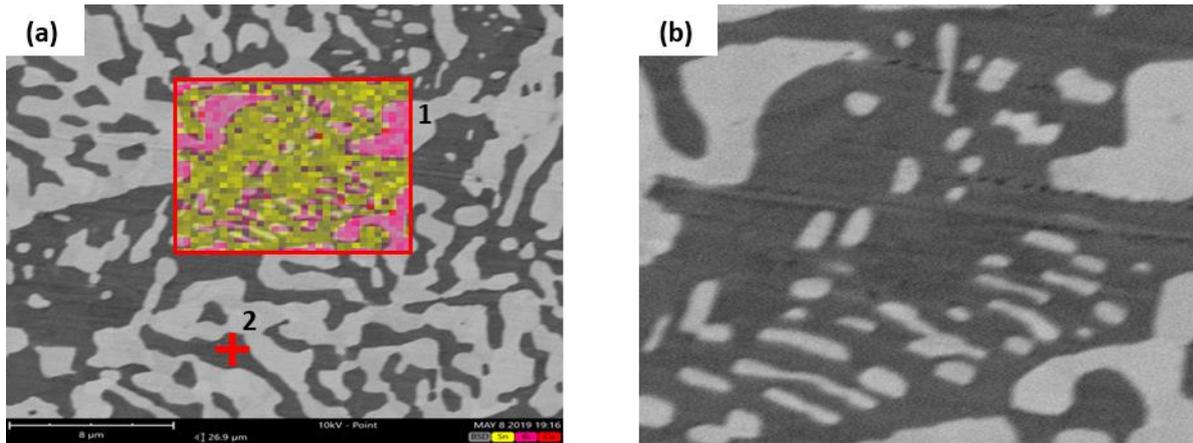


Figure 3 (a) BSE cross-sectioned image of Sn-58Bi-2Co Solder Joint (b) colored area shown in (a)

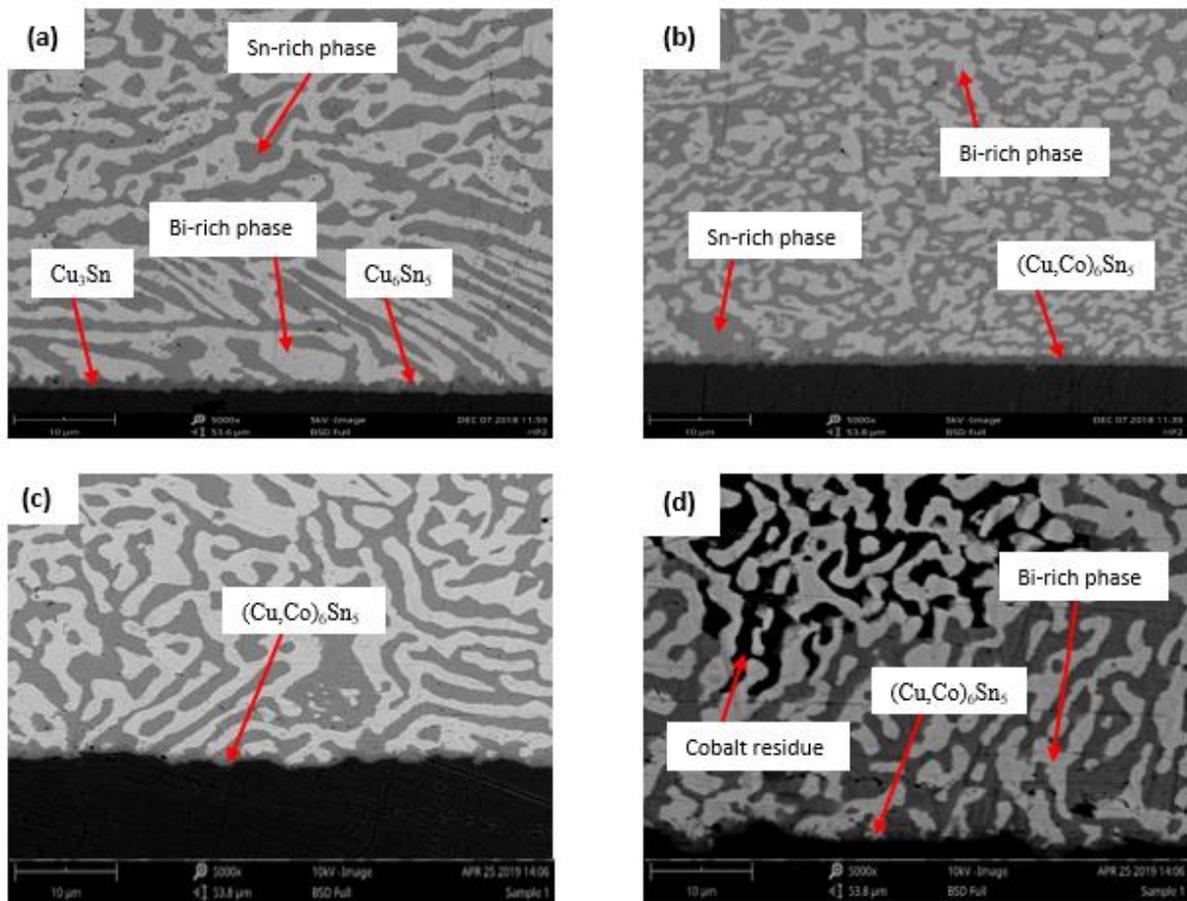


Figure 4 SEM image of interfacial IMC thickness variation of Sn-58Bi with addition of (a) 0%, (b) 0.5%, (c) 1% and (d) 2% of Co-nanoparticle

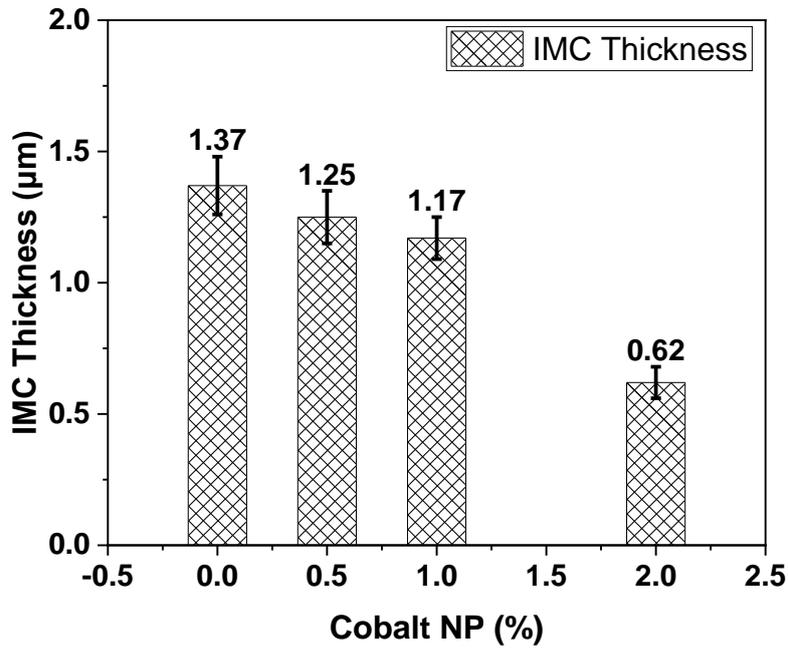


Figure 5 Thickness variation of Interfacial IMC before and after addition of cobalt nanoparticles

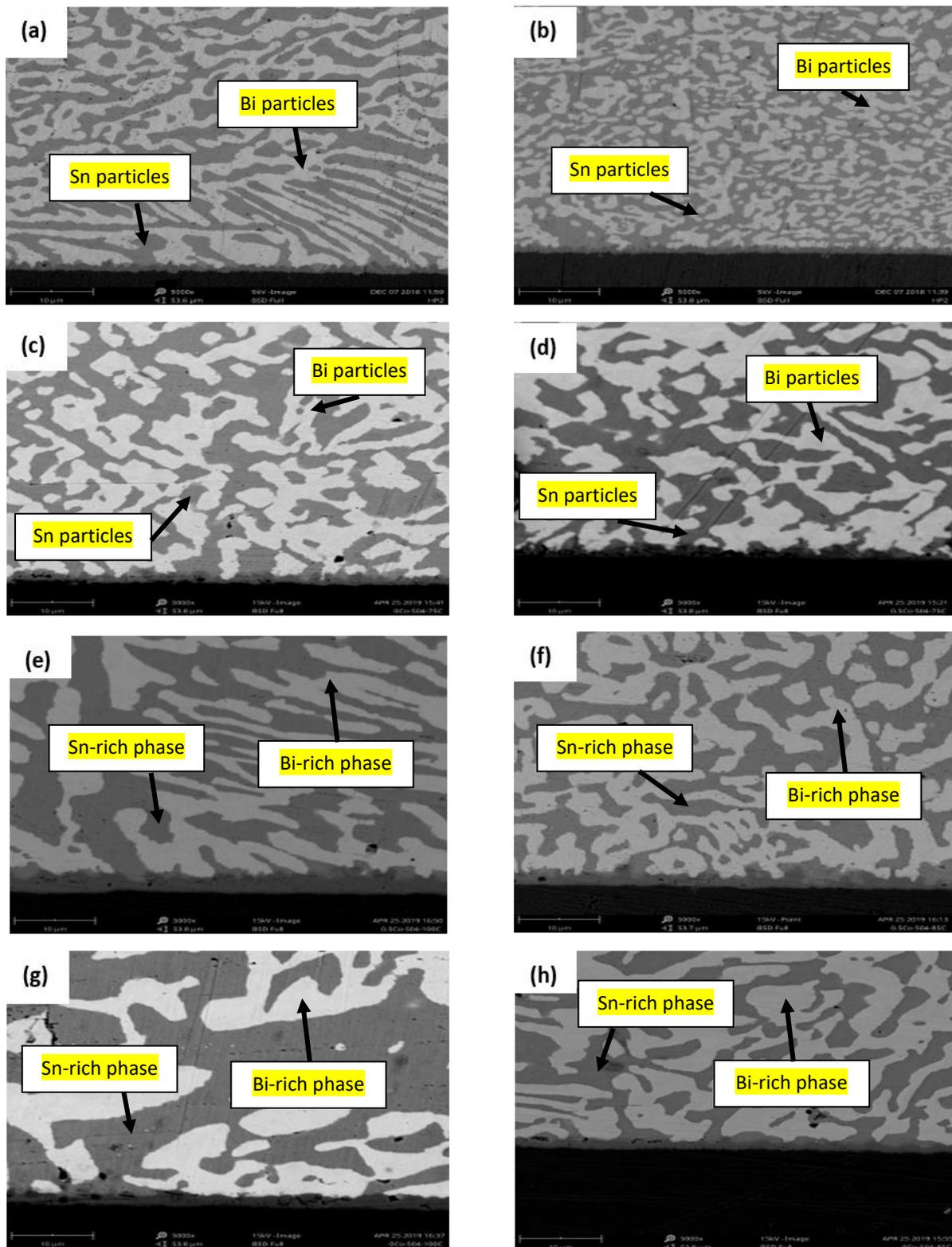


Figure 6 SEM image of (a)Sn-58Bi and (b)Sn-58Bi-0.5Co without thermal aging, SEM image of Sn-58Bi-xCo after underwent thermal aging for 504 hours (c), (e), (g) 0%Co at 70, 85, 100°C respectively and (d), (f), (h) 0.5% Co at 70, 85, 100°C respectively

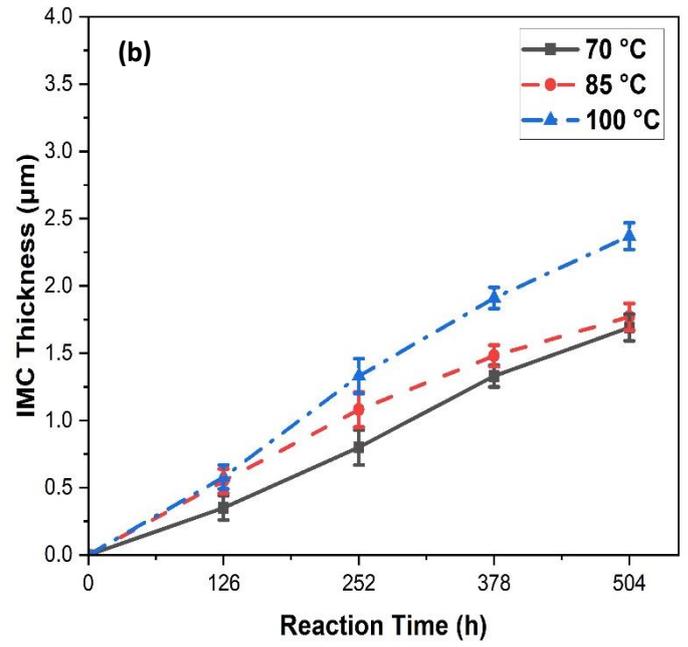
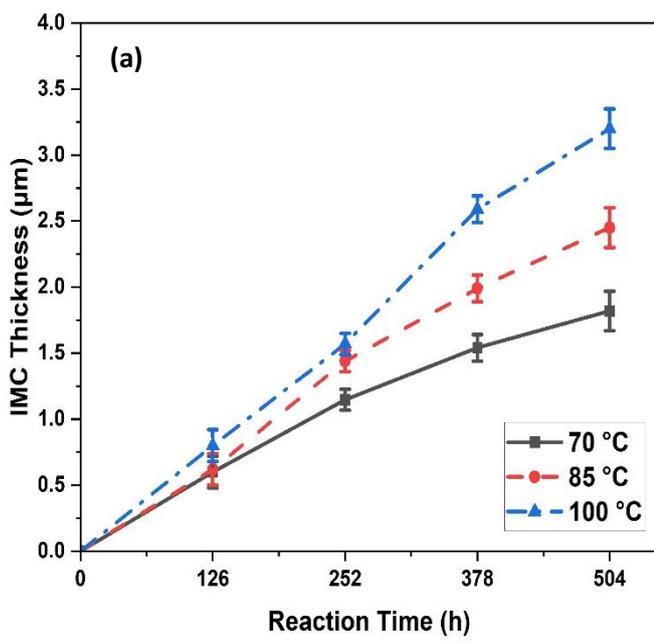


Figure 7 IMC layer thicknesses (a) Sn-Bi and (b) Sn-Bi-0.5Co as function of reaction time at various temperatures.