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Correction: Recent Advances in Thermal Interface Materials

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Some errors were found and should be corrected such as some data errors and manual errors in the 2.1 Model to Predict Thermal Conductivity (λ_{TIM}) and Table 4. Thermal conductivity of common types of fillers for the paper entitled "Recent Advances in Thermal Interface Materials" in ES Materials & Manufacturing, 2020, 7, 4-24, (DOI: 10.30919/esmm5f717). [1]

In previously published paper:

Table 2 lists various models to predict λ_c. Prasher *et al.*[19,22] found that Bruggeman asymmetric model (BAM) matches the experimental data of various polymeric TIM. BAM is very successful in modeling λ_{TIM}. BAM matches the data by assuming α (Biot number) of 0.1. Assuming λ_m of 0.2 W/m·K and particle diameter (d) of 10 μm (typical in commercial TIMs), α=0.1 gives R_b =5×10^6 K m^2 W^{-1}. R_b at the interface between the particle and the matrix could arise due to phonon acoustic mismatch or incomplete wetting of the interface by the polymer. R_b due to phonon acoustic mismatch is of the order of 10^{-8} K m^2 W^{-1} at room temperatures, resulting in α of 0.0002 for the case with d of 10 μm and λ_m of 0.2 W/m·K. Prasher et al. also showed that phonon acoustic mismatch at room temperature is negligible when compared to incomplete particle wetting; however, phonon acoustic mismatch Table 1.

The corrections:

Table 2 lists various models to predict λ_c. Prasher *et al.*[19,22] found that Bruggeman asymmetric model (BAM) matches the experimental data of various polymeric TIM. BAM is very successful in modeling λ_{TIM}. BAM matches the data by order of 10^{-8} K m^2 W^{-1} at room temperatures, resulting in α of 0.0002 for the case with d of 10 μm and λ_m of 0.2 W/m·K. assuming α (Biot number) of 0.1. Assuming λ_m of 0.2 W/m·K and particle diameter (d) of 10 μm (typical in commercial TIMs), α=0.1 gives R_b =5×10^{-6} K m^2 W^{-1}. R_b at the interface between the particle and the matrix could arise due to phonon acoustic mismatch or incomplete wetting of the interface by the polymer. R_b due to phonon acoustic mismatch is of the order of 10^{-8} K m^2 W^{-1} at room temperatures, resulting in α of 0.0002 for the case with d of 10 μm and λ_m of 0.2 W/mK. Prasher *et al*. also showed that the mismatch between phonon and acoustic at room temperature is negligible when compared to incomplete particle wetting; however, this mismatch will influence the palpometers in Table 1.

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The previously published:

Table 4. Thermal conductivity of common types of fillers

Materials	Conductivity (W m^{-1} K^{-1})
Graphene	600
SWCNT	3500
MWCNT	3000
Diamond	2000
Graphite	100-400 (in-plane)
BN	250-300
Ag	427
Cu	393
Au	315
Al	237
BeO	218
AlN	170
Al2O3	39
Zno	21
SiO2	1

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SiO2	1.4[2]

References:

[1] Y. C. Zhou, S. Q. Wu, P. L. Zhu, F. X. Wu, F. Liu, V. Murugadoss, W. Winchester, A. Nautiyal, Z. Wang and Z. H. Guo, *ES Mater. Manuf.*, 2020, **7**, 4-24, doi: 10.30919/esmm5f717

[2] W. H. Zhu, G. Zheng, S. Cao and H. He, *Sci. Rep.*, 2018, **8**, 10537, doi: 10.1038/s41598-018-28925-6.

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