Supplementary Materials for

"Experimental Investigation of the Anisotropic Thermal Conductivity of C/SiC Composite Thin Slab"

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This file includes:

Figures S1-S8

Tables S1-S3

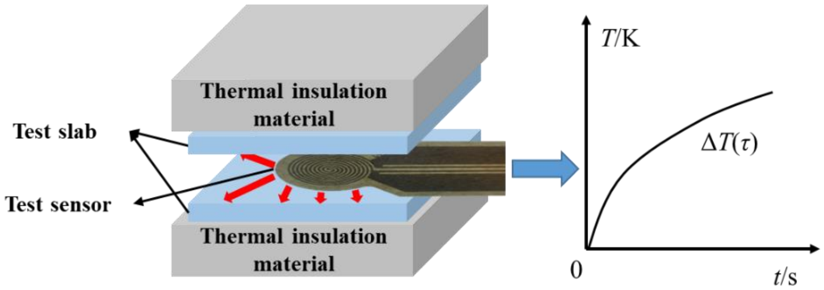
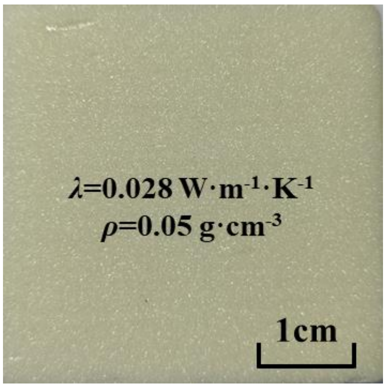
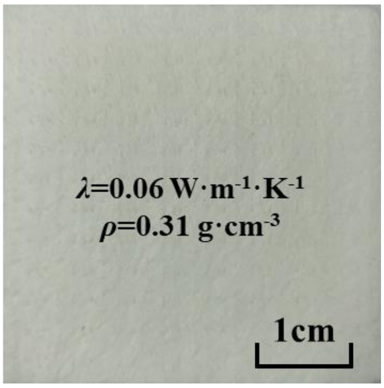


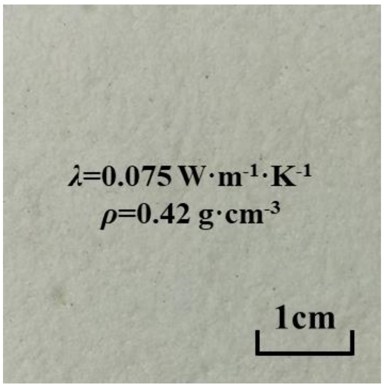
Figure S1 Schematic of slab module of transient plane source method measurement



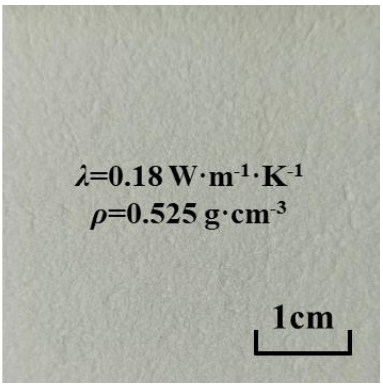
(a) Polyurethane foam



(b) Aluminum silicate fiberboard



(c) Zirconic fiberboard



(d) Polycrystalline mullite fiberboard

Figure S2 Background thermal insulation materials

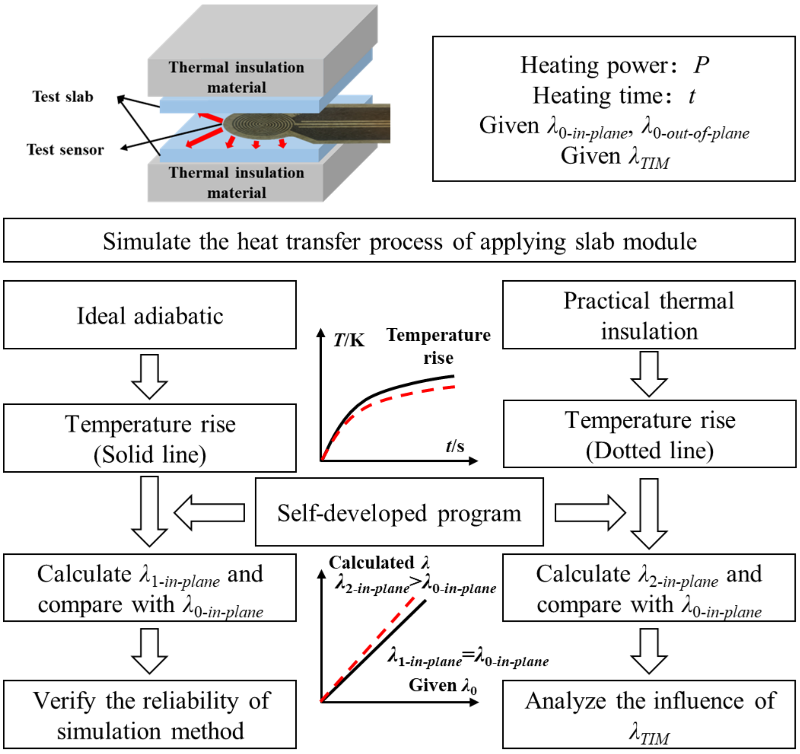


Figure S3 Simulation outline

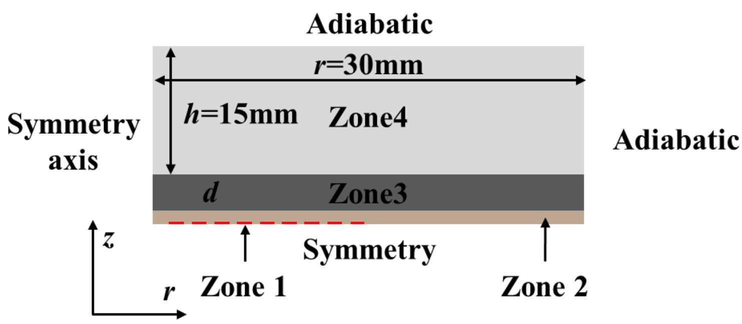
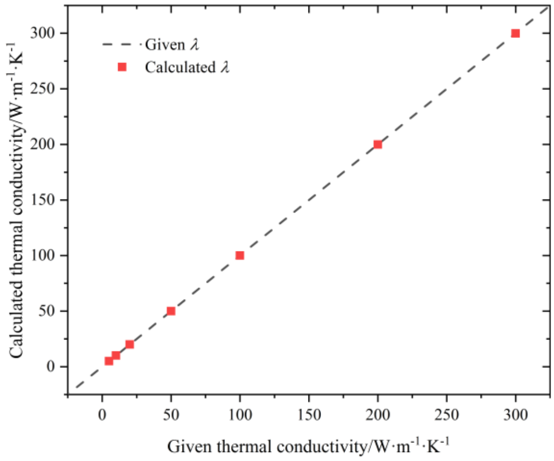
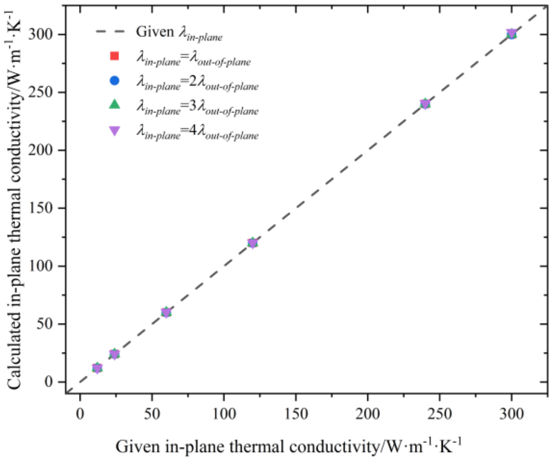


Figure S4 Schematic diagram of computational model

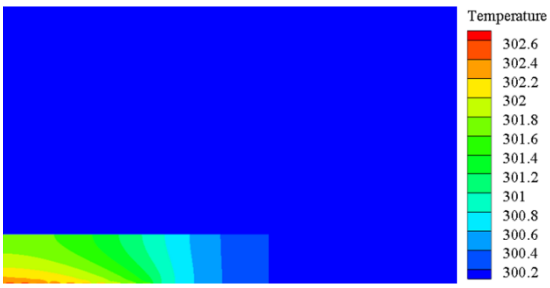


(a) Isotropic materials

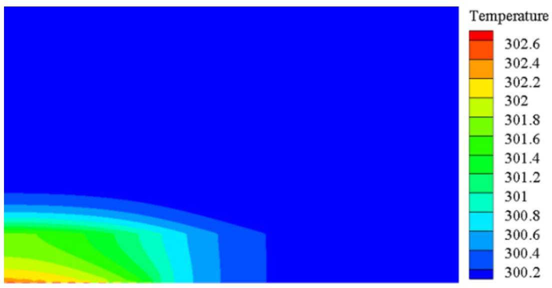


(b) Anisotropic materials

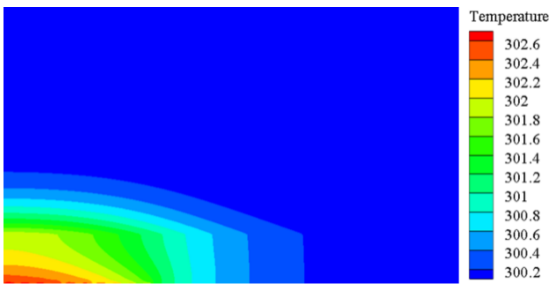
Figure S5 Comparison of thermal conductivity/in-plane thermal conductivity under ideal thermal insulation assumption



(a) Adiabatic



(b) λ_{TIM}=0.1 W·m^{-1}·K^{-1}



(c) λ_{TIM}=0.2 W·m^{-1}·K^{-1}

Figure S6 Temperature distribution by using different thermal insulation condition

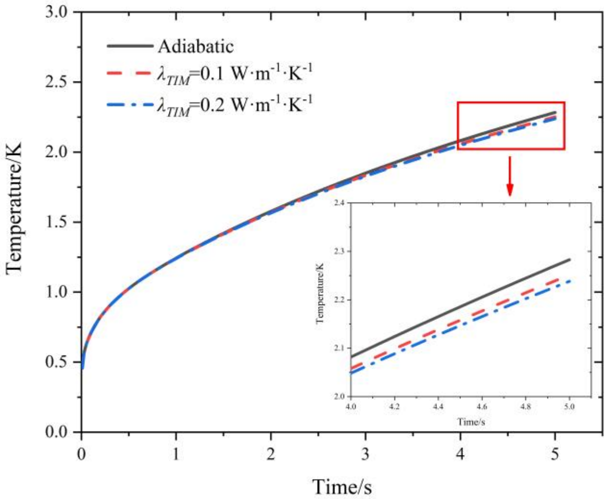
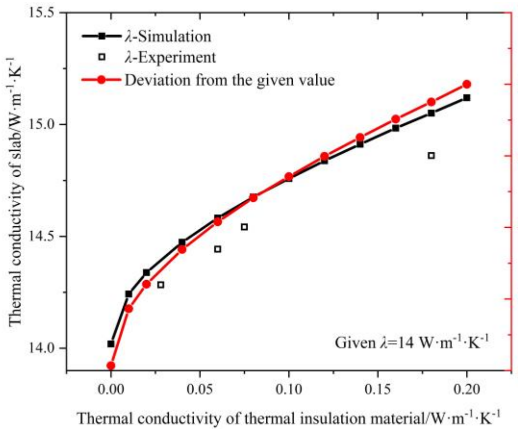
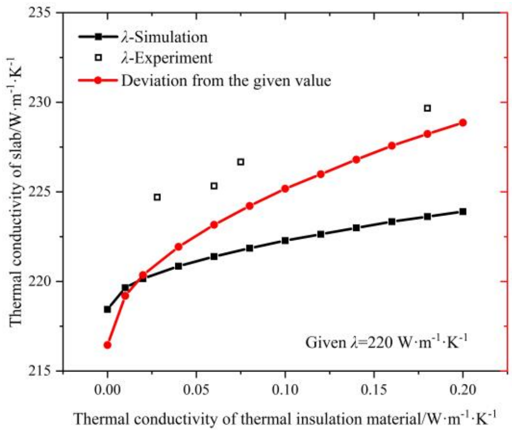


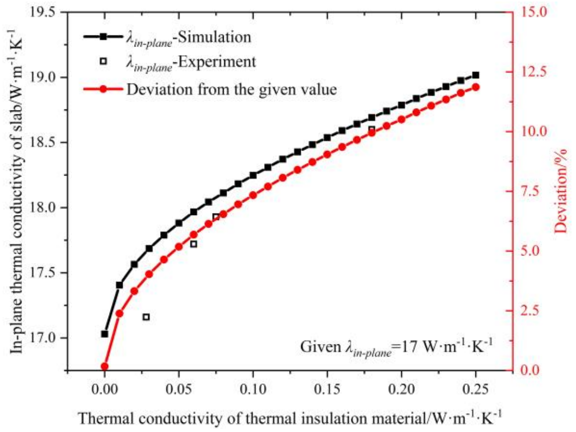
Figure S7 Temperature increase by using different thermal insulation condition



(a) Stainless steel



(b) Aluminum



(c) C/SiC composite

Figure S8 Comparison of numerical and experimental results obtained by using different thermal insulation materials

Table S1 Thermal properties of isotropic materials

λ/W·m^{-1}·K^{-1}	ρ/g·cm^{-3}	c_p/J·g^{-1}·K^{-1}
5	2	1
10	2	1
20	2	1
50	2	1
100	2	2
200	4	2
300	5	2.4

Table S2 Thermal properties of anisotropic materials

$\lambda_{out\text{-}of\text{-}plane}$/W·m^{-1}·K^{-1}	$\lambda_{in\text{-}plane}$/W·m^{-1}·K^{-1}	ρ/g·cm^{-3}	c_p/J·g^{-1}·K^{-1}
3-12	12	2	1
6-24	24	2	1
15-60	60	2	2
30-120	120	3	2
60-240	240	4	3
75-300	300	4	3

Table S3 Thermal properties of experimental validation materials

Material type	λ/W·m^{-1}·K^{-1}	ρ/g·cm^{-3}	c_p/J·g^{-1}·K^{-1}
Stainless steel	14	7.93	0.5
Aluminum	220	2.7	0.9
C/SiC composite	$\lambda_{in\text{-}plane}$: 17 $\lambda_{out\text{-}of\text{-}plane}$: 8	2.1	0.85