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**Supplementary Table 1. Physical parameters of SiO<sub>2</sub> used in the finite element simulation.**

Physical properties	Formula
Thermal expansion coefficient /K <sup>-1</sup>	$-1.7e^{-6} + 1.5e^{-8} \times T - 3.3e^{-11} \times T^2 + 3.2e^{-14} \times T^3 - 1.2e^{-17} \times T^4$ [100,500]
Thermal conductivity /(W·m <sup>-1</sup> ·K <sup>-1</sup> )	$0.1 + 0.003 \times T + 4.3e^{-5} \times T^2 - 2.3e^{-7} \times T^3 + 3e^{-10} \times T^4$ [100,280] $-0.1 + 0.018 \times T - 5.3e^{-5} \times T^2 + 7.6e^{-8} \times T^3 - 5.06e^{-11} \times T^4 + 1.3e^{-14} \times T^5$ [280,500]
Density /(kg·m <sup>-3</sup> )	$2219.4 + 0.01 \times T - 4.7e^{-5} \times T^2 + 7e^{-8} \times T^3 - 11e^{-11} \times T^4 + 1.4e^{-14} \times T^5$ [100,500]
Young modulus /Pa	$7.2e^{10} - 8e^7 \times T + 1200039 \times T^2 - 7440.2 \times T^3 + 22e^{-6} \times T^4$ [100,170] $7e^{10} + 1.2e^7 \times T + 11447.5 \times T^2 - 26 \times T^3 + 0.015 \times T^4 - 3e^{-6} \times T^5$ (170,500)
Poisson's ratio	$0.2 - 3.5e^{-4} \times T + 5.4e^{-6} \times T^2 - 2.8e^{-8} \times T^3 + 4.9e^{-11} \times T^4$ [100,170] $0.1 + 2.3e^{-4} \times T - 9.3e^{-7} \times T^2 + 1.8e^{-9} \times T^3 - 1.6e^{-12} \times T^4 + 5.4e^{-16} \times T^5$ [170,500]
Heat capacity at constant pressure /(J·kg <sup>-1</sup> ·K <sup>-1</sup> )	$61.5 + 1.9 \times T + 0.004 \times T^2 - 1.7e^{-5} \times T^3 + 1.9e^{-8} \times T^4 - 7.1e^{-12} \times T^5$ [100,500]

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