Supporting information

Enhancing thermal insulation of EPDM ablators via constructing alternating planar architecture

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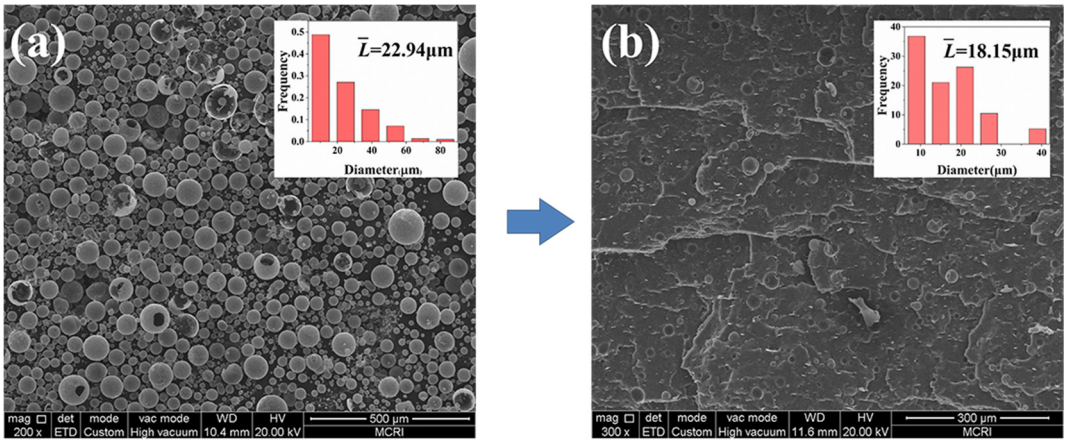

Figure S1. The SEM images of (**a**) microspheres, and (**b**) heat-insulated EPDM

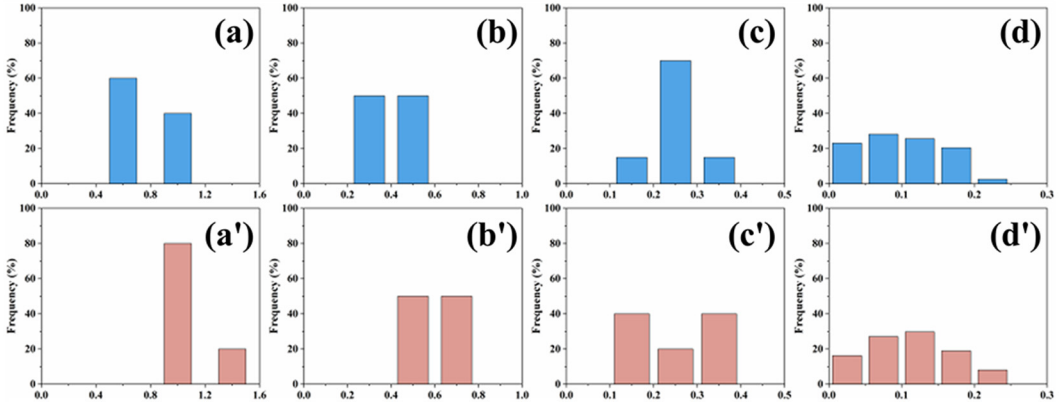

Figure S2. The thickness of the multilayer EPDM composites with different layers, (**a, a'**) $(AM/HM)_{10}$; (**b,b'**) $(AM/HM)_{20}$; (**c, c'**) $(AM/HM)_{40}$; (**d, d'**) $(AM/HM)_{80}$; the AM component represented by brown, and HM component represented by blue.

Table S1. Formulation of EPDM materials.

Samples	AM	HM
EPDM	100	100
Liquid EPDM	0	15
Boron Phenolic	20	0
DM	1.5	1.5
D	1	1
EZ	1	1
ZnO	3	3
SA	1	1
S	1.5	1.5
SiO_2	20	20
FL	2.5	0
CF	2.5	0
Borosilicate microspheres	0	10

Table S2. Data of TG/DTG of the EPDM composites.

Samples	Max decomposition temperature(℃)	Residual mass(%)
HM	452.30	19.238
AM	455.46	21.074
$(AM/HM)_{10}$	439.80	18.691
$(AM/HM)_{20}$	440.27	18.921
$(AM/HM)_{40}$	438.73	18.260
$(AM/HM)_{80}$	439.57	18.731