

Supplementary Information

Table S1 Scheme of factors and levels of orthogonal experiment

	Immersion time in dopamine solution (min)	Immersion time in GO suspension (h)	Annealing temperature (°C)	Annealing time (h)
Level 1	20	2	100	0.5
Level 2	40	4	200	1
Level 3	60	6	300	2

Table S2 Orthogonal experimental table, four factors and three levels

Experiment number	Immersion time in dopamine solution (min)	Immersion time in GO aqueous suspension (h)	Annealing temperature (°C)	Annealing time (h)
1	20	2	100	0.5
2	20	4	200	1
3	20	6	300	2
4	40	2	200	2
5	40	4	300	0.5
6	40	6	100	1
7	60	2	300	1
8	60	4	100	2
9	60	6	200	0.5

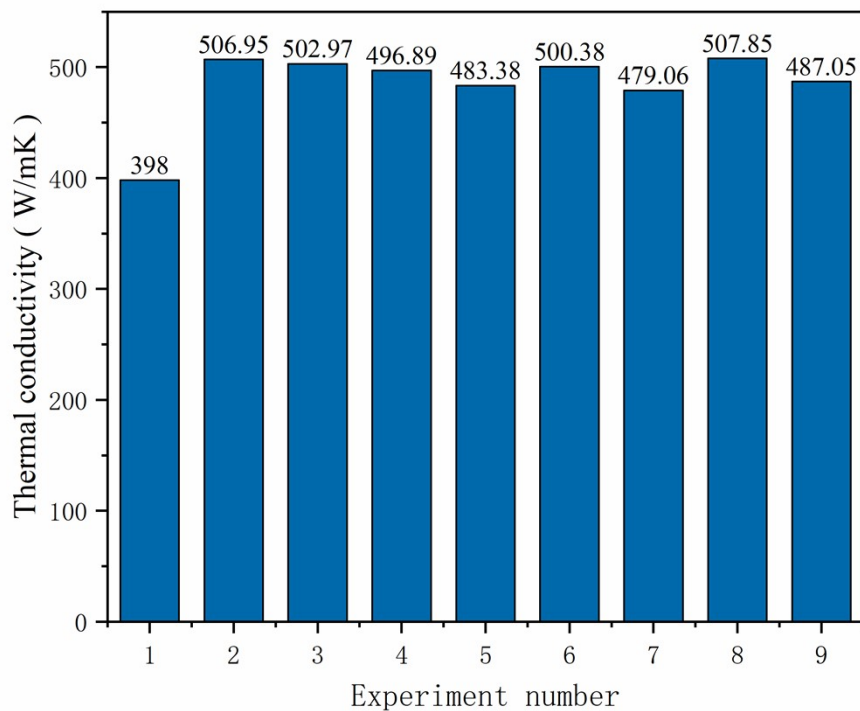


Fig. S1 The thermal conductivity of Cu substrate (a) and the samples in Table S2

Table S3 Further experiment

Experiment number	Immersion time in dopamine solution (min)	Immersion time in GO suspension (h)	Immersion time in aqueous suspension (h)	Annealing temperature (°C)	Annealing time (h)
10	60	1		200	1
11	60	2		200	1
12	80	1		200	1
13	80	2		200	1
14	60	0.5		200	1

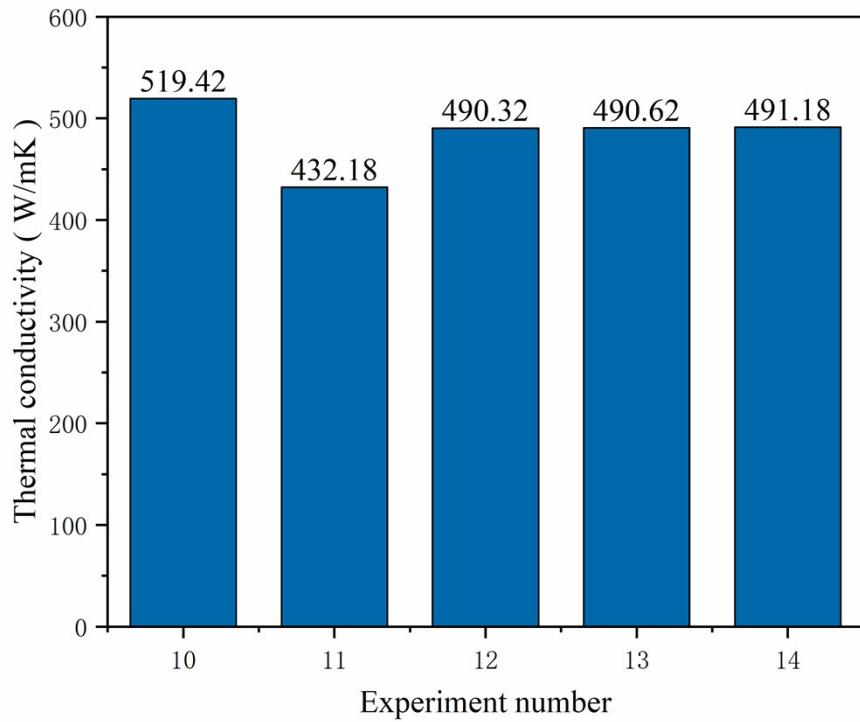


Fig.S2 The thermal conductivity of Cu substrate (a) and the samples in Table S3

Table S4 GO Immersion Test

Experiment number	Immersion time in dopamine solution (min)	Immersion time in GO suspension (h)	Immersion time in aqueous solution (h)	Annealing temperature (°C)	Annealing time (h)
10	60	1		200	1
11	60	2		200	1
12	60	3		200	1
13	60	4		200	1
14	60	5		200	1

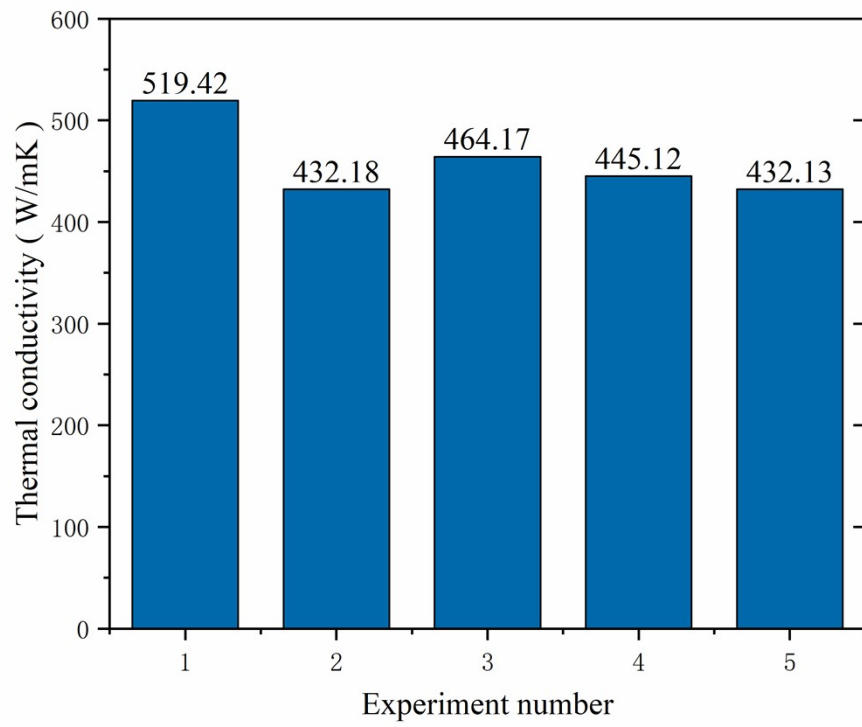


Fig.S3 The thermal conductivity of Cu substrate (a) and the samples in Table S4