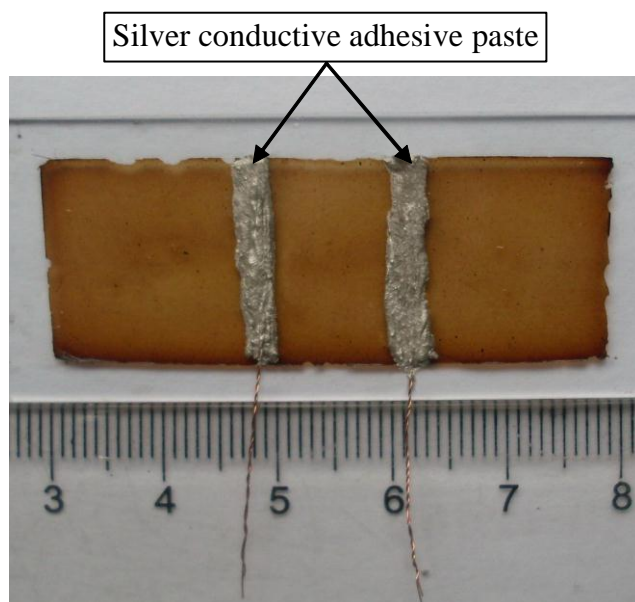


## Supplementary Material

# Preparation of reduced graphene oxide by infrared irradiation induced photothermal reduction

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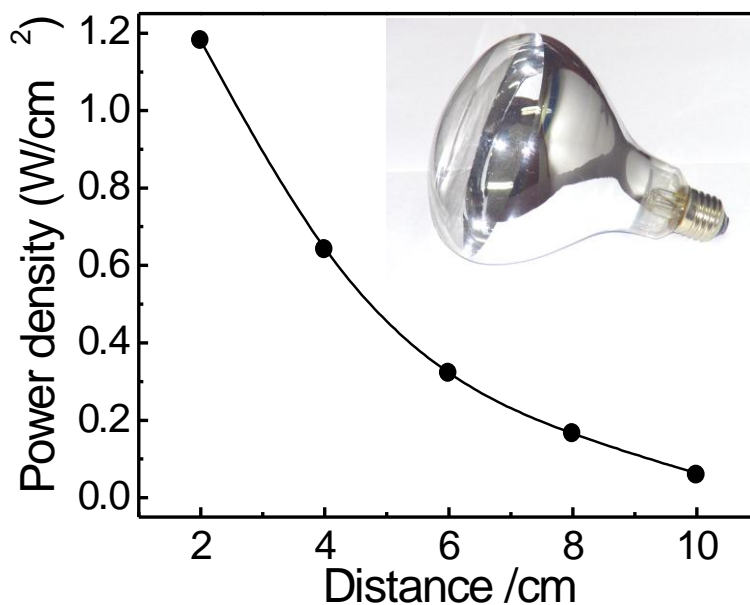


**Fig. S1** Digital camera image shows a sample used for the measurement of the influence of IR light on the electrical resistance of the GO films. The distance between two electrodes is 10 mm. At the beginning, the resistance of the samples is above  $10^8 \Omega$ , which is not able to be measured by the resistimeter. But after being exposed by the IR light for a period of time, the resistance decrease rapidly to below  $10^8 \Omega$ , which becomes measurable.

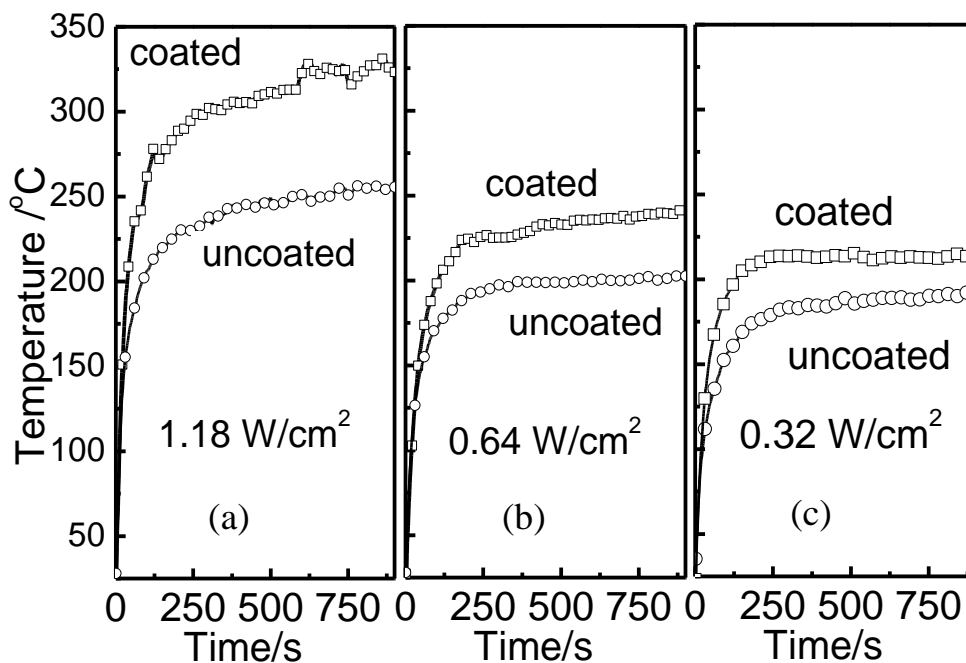
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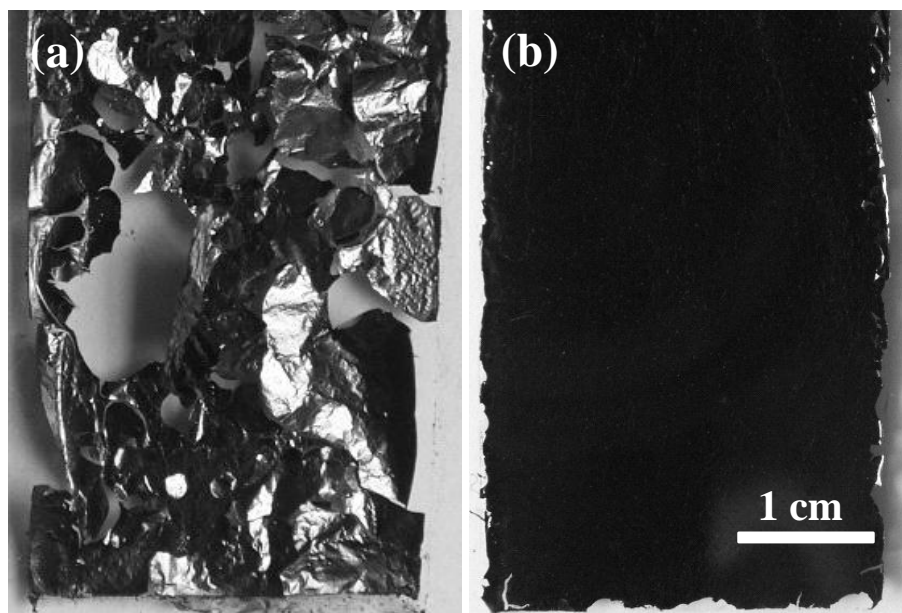
(M. Peng).



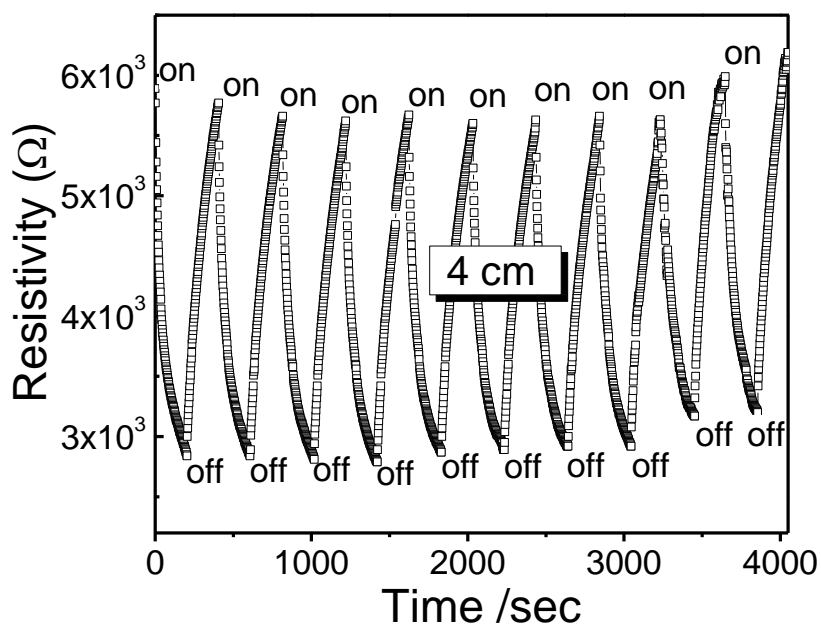
**Fig. S2** Relationship between the power density of IR and the distance of the sample to the IR lamp. The inset presents the picture of the IR lamp used in this study.



**Fig. S3** Evolution of the temperature of the GO-coated thermocouple and (b) bare (uncoated) thermocouple exposed to IR irradiation at (a) 2, (b) 4 and (c) 6 cm to the IR lamp, corresponding to the IR power density of 1.18, 0.64 and 0.32 W·cm<sup>-2</sup>, respectively.



**Fig. S4** Digital camera images of (a) a cracked r-GO film after being exposed to IR radiation at a power density of  $1.18 \text{ W/cm}^2$ ; and (b) an intact r-GO film after being exposed to IR radiation first at a power density of  $0.32 \text{ W/cm}^2$  and then exposed to IR radiation at  $1.18 \text{ W/cm}^2$  to complete the reduction. The samples were prepared in nitrogen.



**Fig. S5** IR-response curves of r-GO films repeatedly exposed to IR light at a time interval of 200 sec. The distance between the sample and the IR lamp (275 W) is 4 cm ( $0.64 \text{ W}\cdot\text{cm}^{-2}$ ).