

## Electronic Supplementary Information

### Mangifera indica, Ficus religiosa and Polyalthia longifolia leaf extract-assisted green synthesis of graphene for transparent highly conductive film

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#### **S1: Effect of reflux conditions on GO**

Owing to the weak reducing activity of the leaf extracts, longer reaction time of 24 h has been used to synthesize the graphene nanosheets (Gns) from reduction of graphene oxide (GO). As the samples are refluxed at 50 °C for 24 h, possibility of self-reduction of GO to a small extent cannot be ruled out. To investigate this possibility, controlled experiment by refluxing GO in deionized (DI) water without leaf extracts has been performed under conditions similar to those used for GO reduction by leaf extracts. Fig. S1 and S2 respectively show the comparisons of the Raman spectra and X-ray diffraction (XRD) patterns of GO and wR GO, the sample subjected to the controlled experiment.

No significant difference between the structural features of GO and wR GO could be observed through Raman and XRD studies. Hence, the possibility of significant reduction of GO by refluxing in Di water at 50 °C for 24 h can be discarded safely.

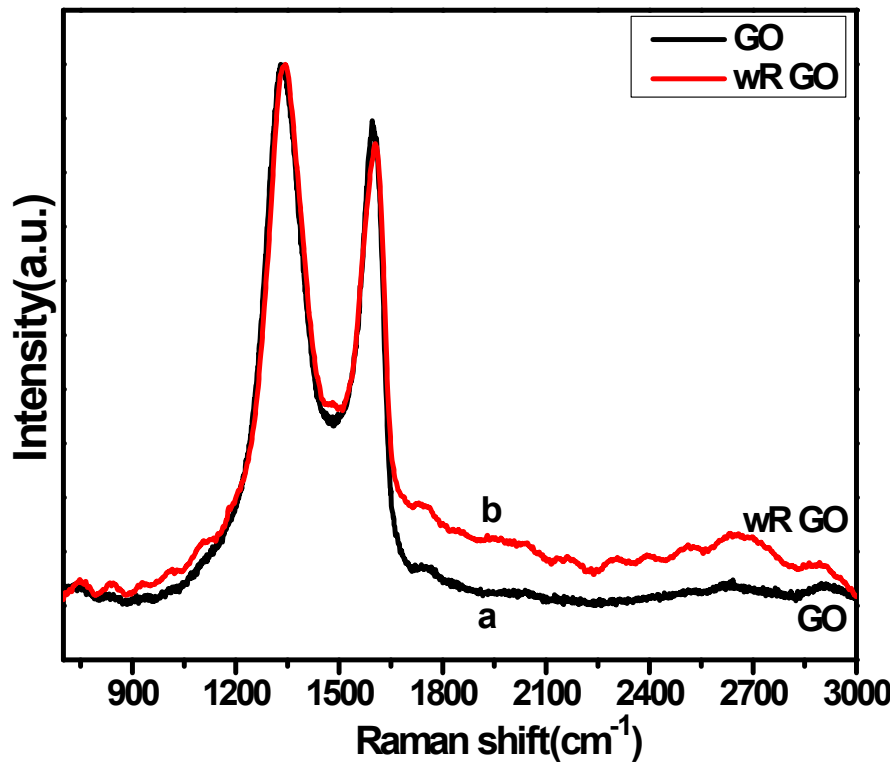


Fig. S1: Raman spectra of (a) GO (b) wRGO (GO without reducing agent at 50 °C)

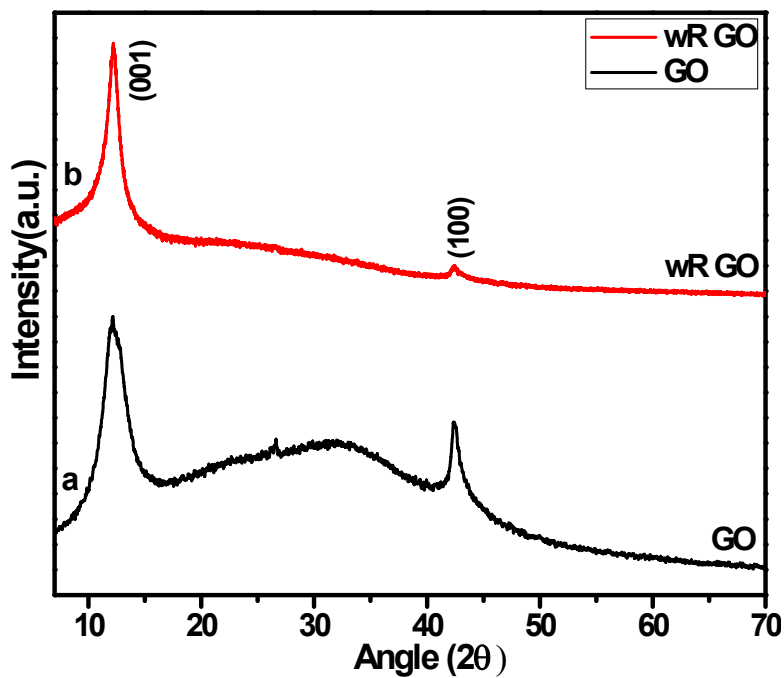


Fig. S2: XRD of (a) GO (b) wRGO (GO without reducing agent at 50 °C)

## S2: Comparison of present work with literature

Table S1 shows a comparison of the performances of the previously reported reducing agents with that of the present study for the reduction of GO through wet chemical route.

**Table S1.** Comparison of the performances of different reducing agents for reduction of GO through wet chemical route.

Precursor Material	T (°C)	I <sub>D</sub> /I <sub>G</sub>	C/O	Reducing agent	Reducing agent Issue	Ref.
GO	180	1.56	7.00	N <sub>2</sub> H <sub>4</sub>	Toxic	[1]
GO	-	-	8.87	C <sub>6</sub> H <sub>6</sub> O <sub>2</sub>	Hazardous	[2]
GO	95	1.15	15.1	N <sub>2</sub> H <sub>4</sub>	Toxic	[3]
GO	50	1.77	5.40	Solid N <sub>2</sub> H <sub>4</sub>	Toxic	[4]
GO	27	-	5.38	NaBH <sub>4</sub>	Hazardous	[5]
GO	-	1.70	8.60	NaBH <sub>4</sub>	Hazardous	[6]
GO	95	1.18	-	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	Green	[7]
GO	80	1.07	-	C <sub>13</sub> H <sub>16</sub> N <sub>2</sub> O <sub>2</sub>	Green	[8]
GO	50	1.21	4.58	Leafs extract	Natural	Present work

## References

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