

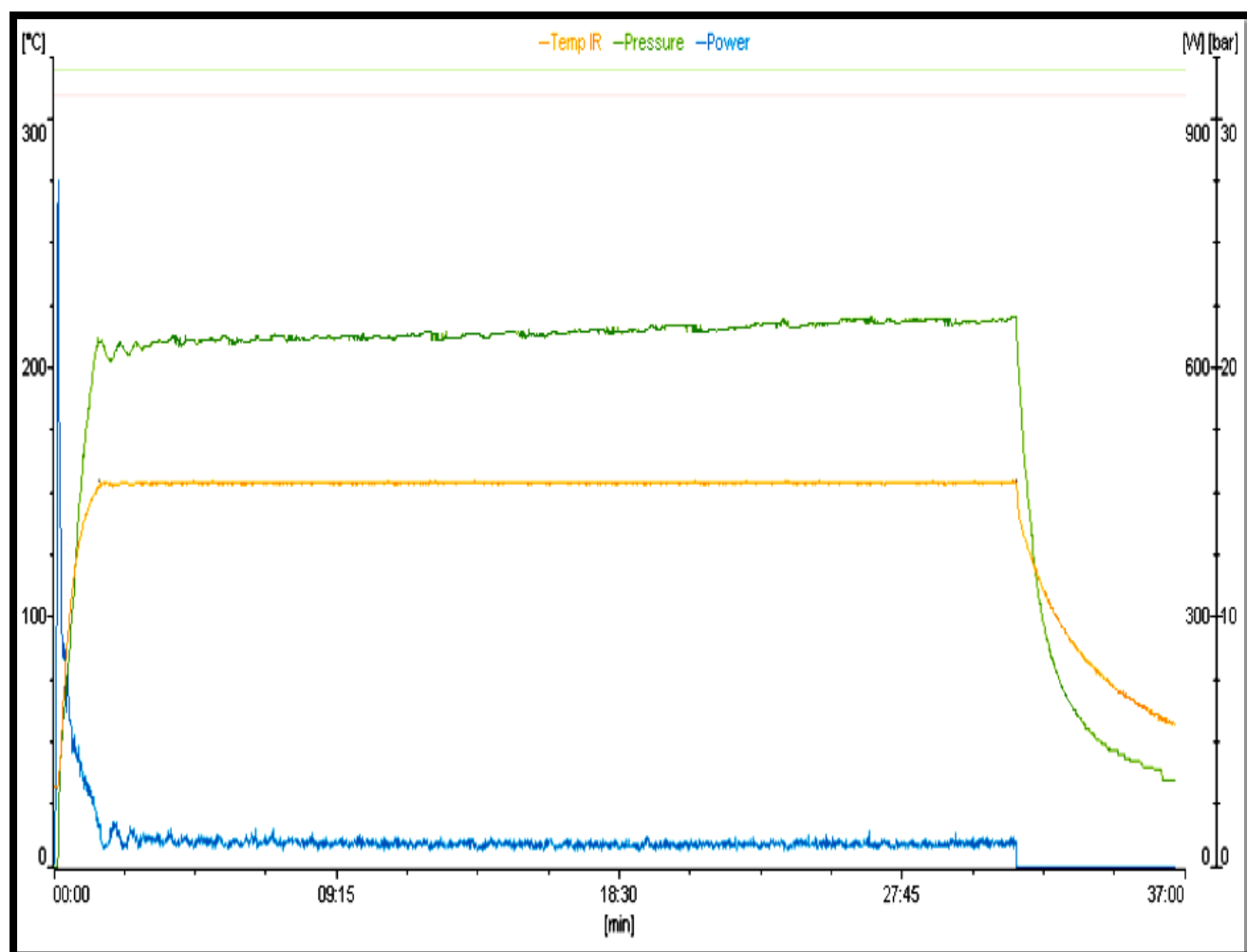
## ZnO anchored Graphene hydrophobic nanocomposite based bulk hetero-junction solar cells showing enhanced short circuit current.

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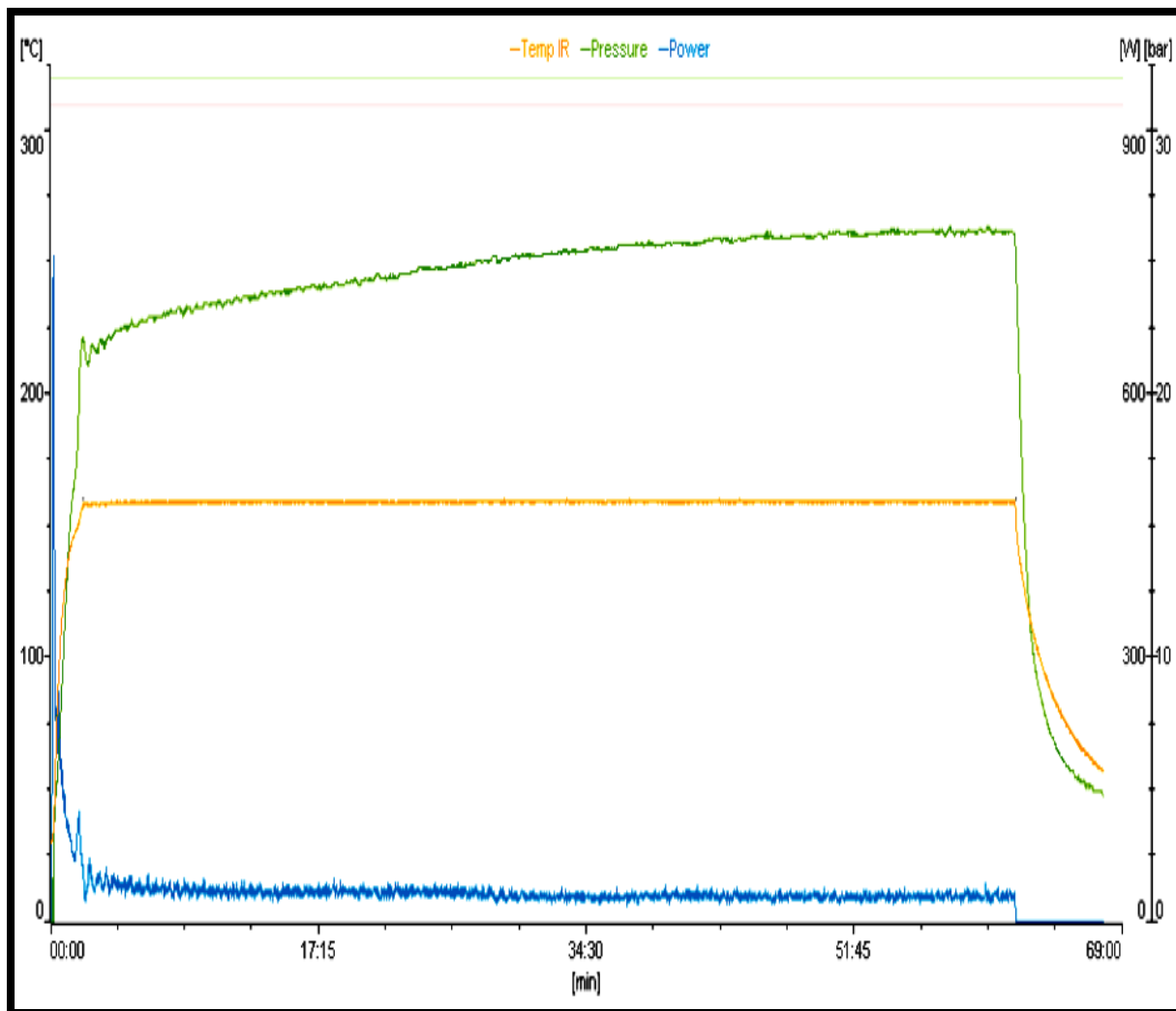
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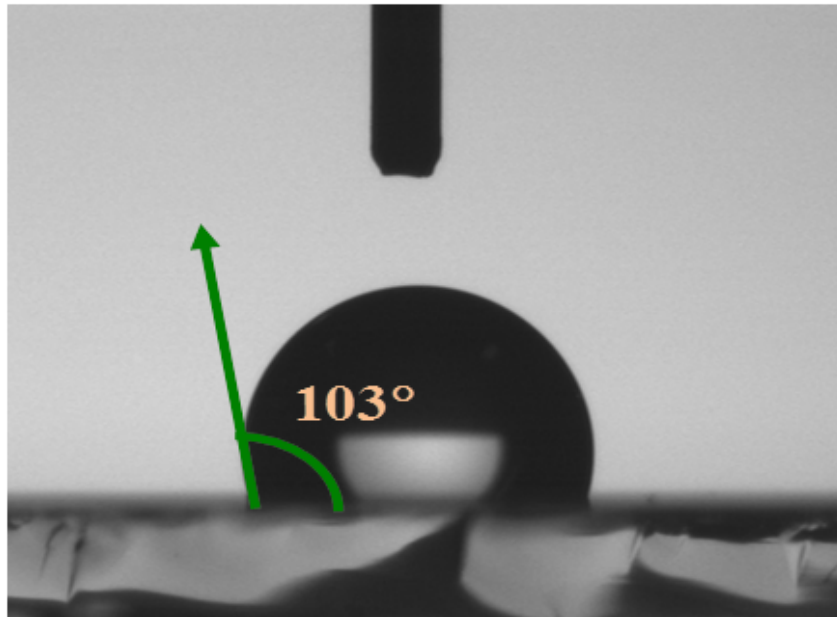
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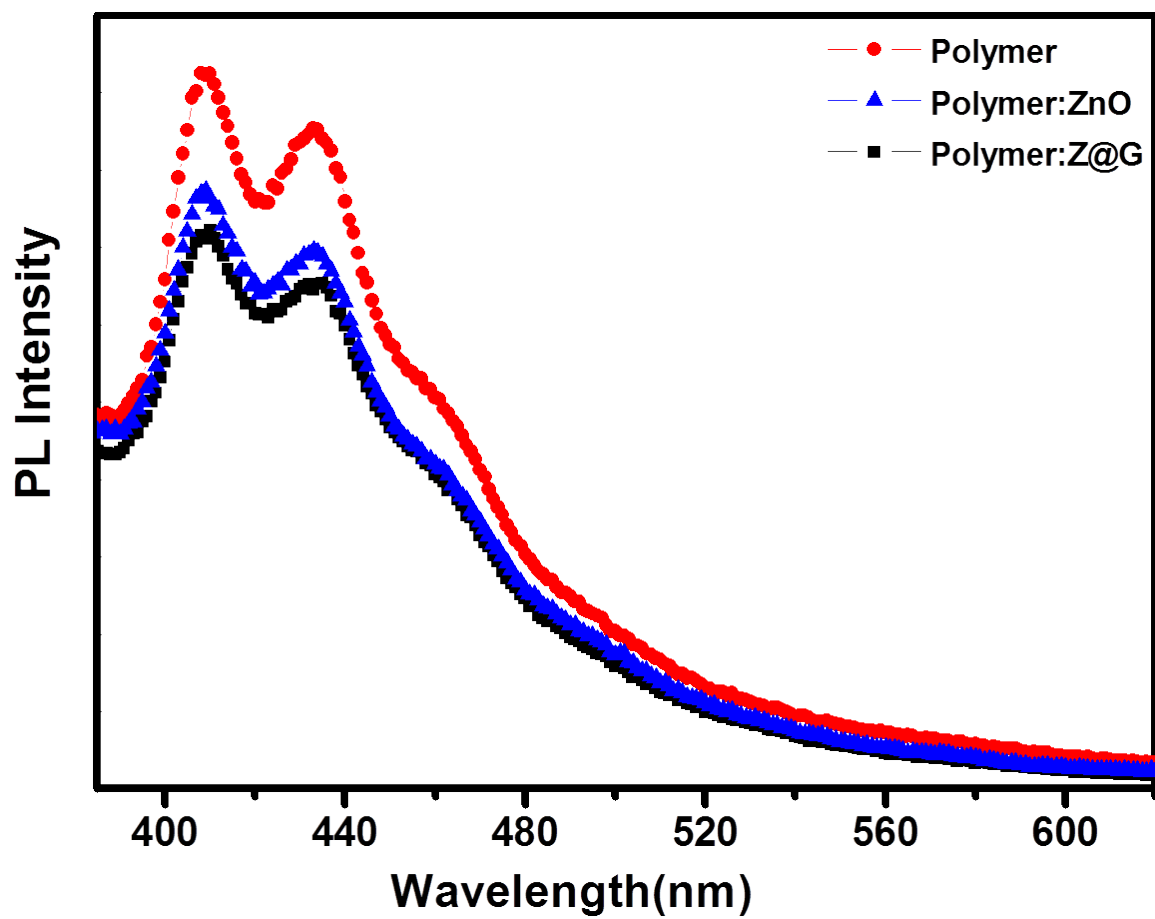
S1 : Graph showing variation of Temperature, Pressure and Power during microwave assisted hydrothermal reaction for ZnO nanoparticles synthesis.



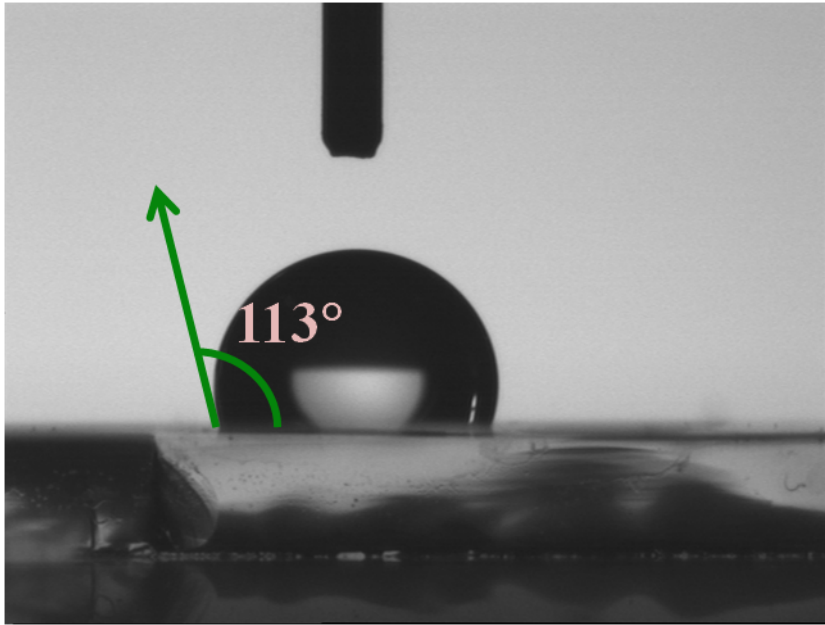
**S2 : Graph showing variation of Temperature, Pressure and Power during microwave assisted hydrothermal reaction for ZnO decorated graphene nanocomposite.**



**S3 : Contact angle measurement of hydrothermally synthesized ZnO nanoparticles. Contact angle greater than  $90^\circ$  clearly shows hydrophobic nature of synthesized nanoparticles (as  $\theta < 90^\circ$  is hydrophilic whereas  $\theta > 90^\circ$  is hydrophobic)**



S4 : PL quenching on addition of ZnO nanoparticles and Z@G nanocomposite to the polymer.



**S5 : Contact angle measurement of hydrothermally synthesized Z@G nanocomposite. Contact angle greater than  $90^\circ$  clearly shows hydrophobic nature of synthesized nanoparticles (as  $\theta < 90^\circ$  is hydrophilic whereas  $\theta > 90^\circ$  is hydrophobic)**

**Table S6** : Crystallographic data of ZnO nanoparticles, Z@G nanocomposite and RGO representing interplanar spacing (d-value), miller indices (hkl), 2 $\theta$  value and average crystallite size.

Materials	2 $\theta$ (degree)	(hkl)	d (Å)	Average particle size (nm)
ZnO	31.9	(100)	2.8	4.5
	34.58	(002)	2.6	
	36.4	(101)	2.47	
	47.6	(102)	1.9	
	56.7	(110)	1.6	
	63.1	(103)	1.47	
	68.09	(112)	1.39	
	72.4	(004)	1.31	
	76.7	(202)	1.2	
Z@G	31.8	(100)	2.8	8.0
	34.4	(002)	2.6	
	36.2	(101)	2.5	
	47.5	(102)	1.9	
	56.5	(110)	1.6	
	62.8	(103)	1.5	
	67.9	(112)	1.4	
	72.4	(004)	1.3	
	76.8	(202)	1.2	
RGO	29.4	(002)	3.1	5.4