Supplementary Information (SI) for RSC Applied Polymers.

Supplementary Data

Figure S1: Effect of direct UV light irradiation alone on (A) MB (B) CR (C) BB and (D) RB dyes for 60 minutes each.

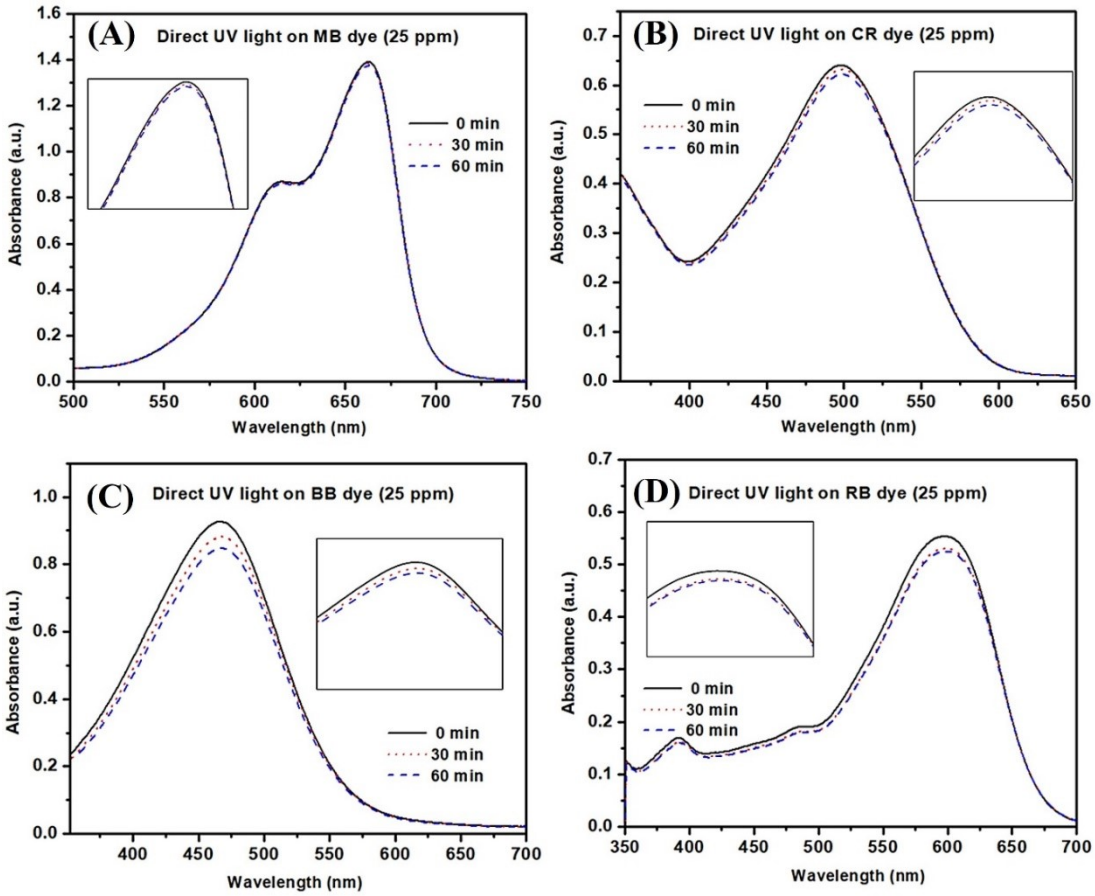

Figure S2: TGA studies of the CuO-ZrO_2@PAN fibers at 40 wt.%

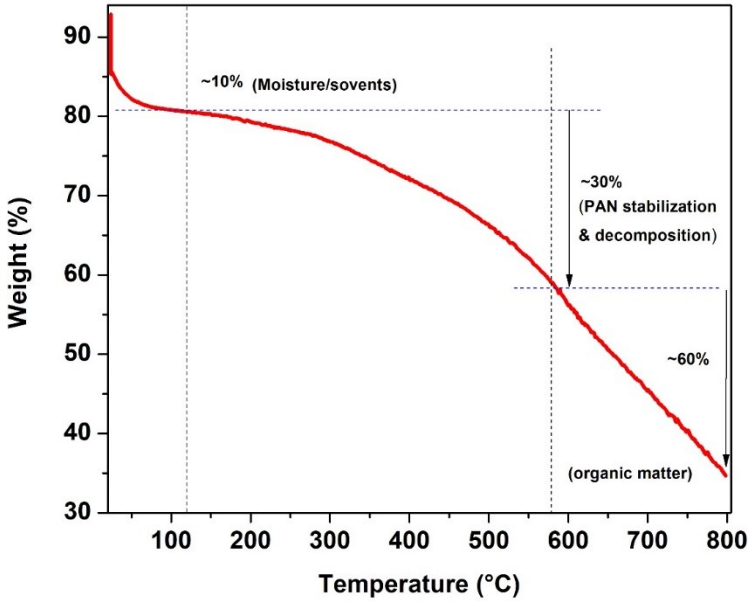

Figure S3: Roughness of Synthesised Fibers is clearly visible

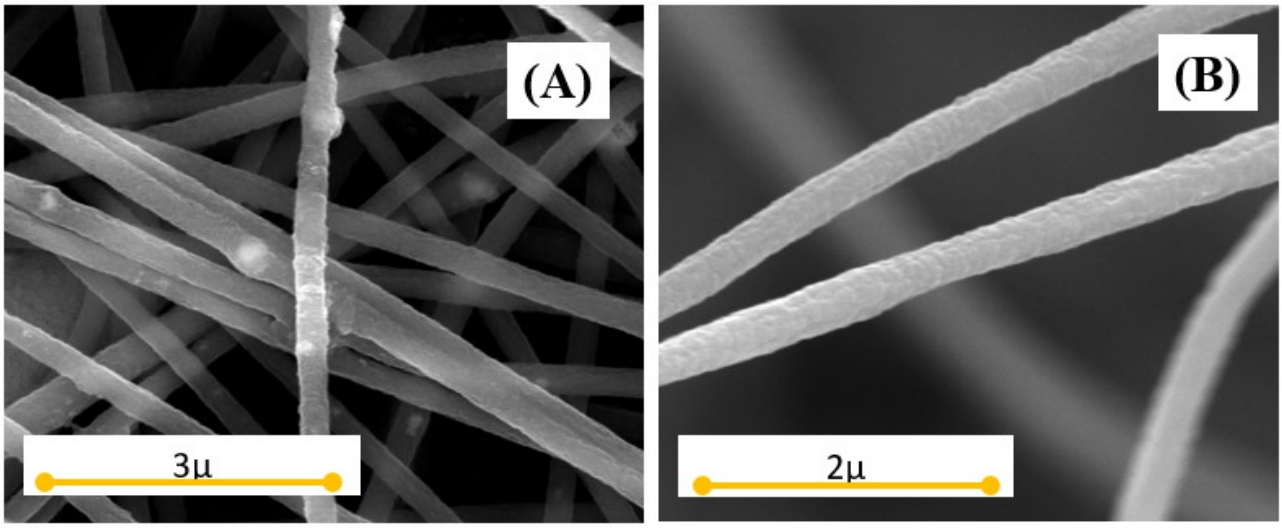

Figure S4: (A) The average size of the CuO-ZrO_2@PAN Nanofibers NPs using ImageJ **(B)** Band gap energy of the fibers **(C)** TEM image of CuO-ZrO_2 NPs **(D)** average size of the CuO-ZrO_2 NPs

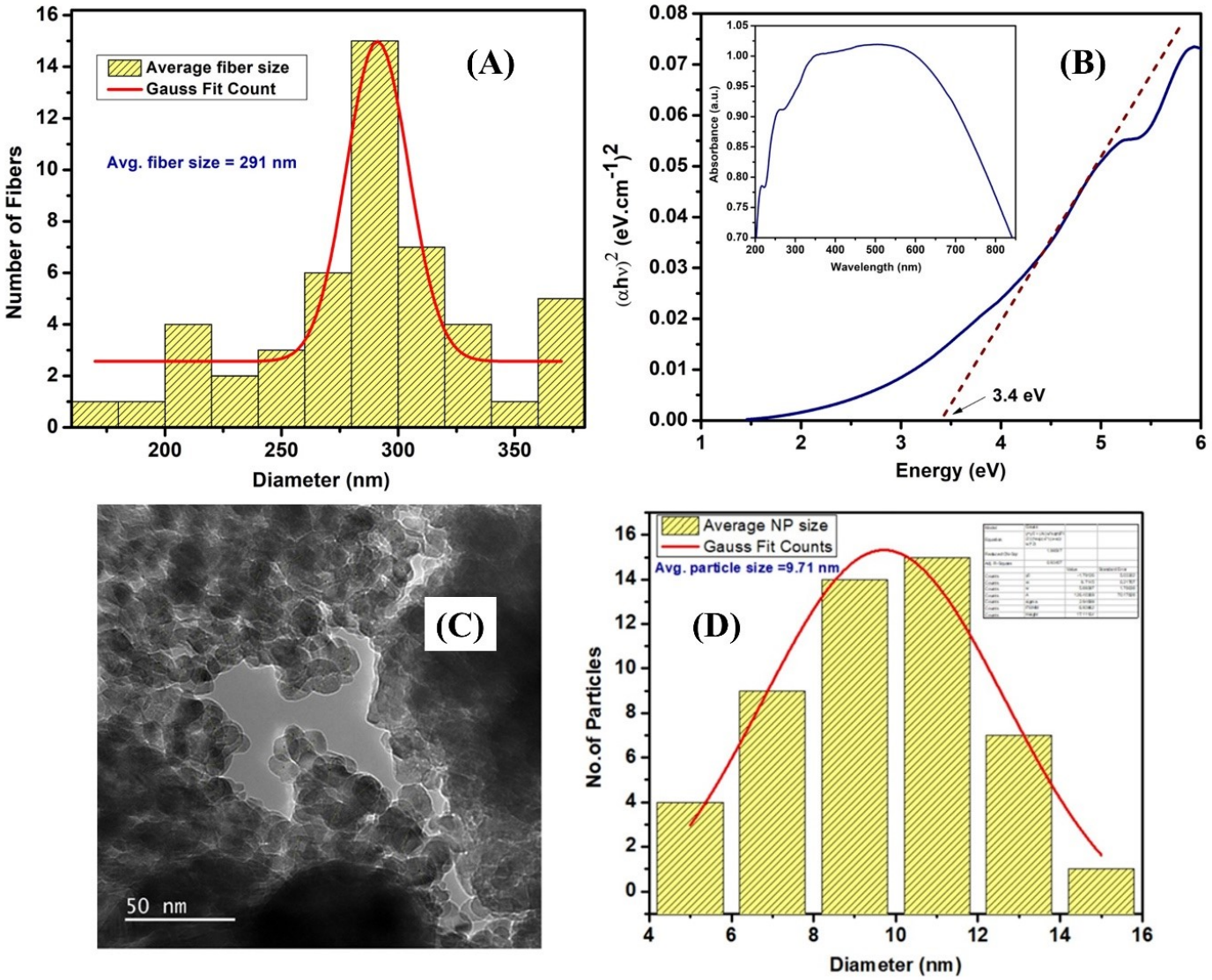

Figure S5: (A) The dark adsorption results for 30 minutes with different composition % and **(B)** Recyclability studies for five consecutive cycles for MB dye

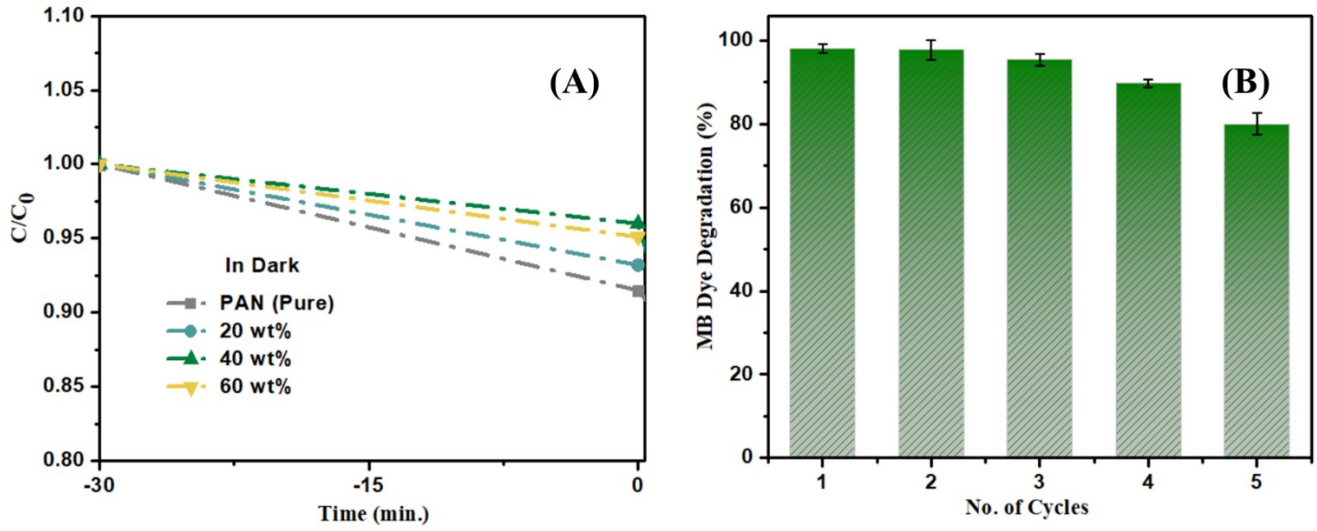

Figure S6: The Band gap suggested of both CuO, ZrO_2 and CuO-ZrO_2 NPs to understand the Type II alignment

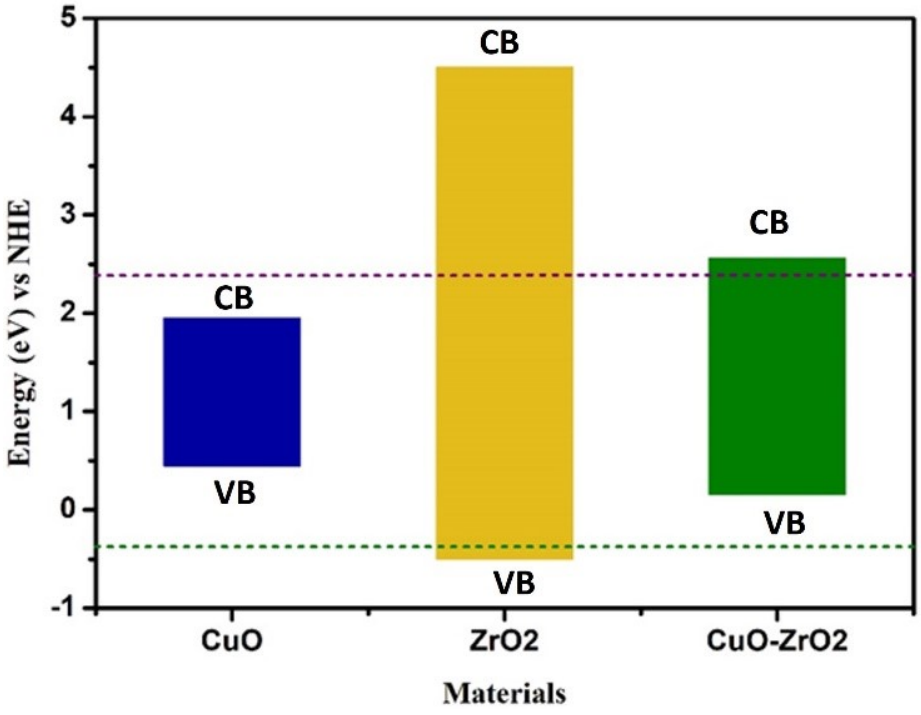

Table S1: Performance Comparison of previously reported materials and presented work of CuO-ZrO_2@PAN NFs

Material Used	No. Of Dyes targeted	Degradation %	Nanosystem type	Time Taken	References

5% Ta-doped TNF	1	MB	Metal-metal oxide Nanofibers	>200 min	[1]
$Ag_2O/ZnO-TiO_2$	1	RhB (94%)	Tertiary nanocomposite	150 min	[2]
Cu_2O-CuO/TiO_2 on Cu wires	2	MB, MO (87%)	Bi metal oxide nanorodes	120 min	[3]
TiO_2-GO	2	MG (85%), MB (93%)	Nanocomposite	60 min	[4]
Zr/Ag co-doped TiO_2 NFs	1	CR (99.3%)	Tertiary Nanofiber	120 min	[5]
CeO_2 NFs	1	MB (97.6%)	Metal oxide Nanofibers	180 min	[6]
Ag-ZnO NFs	1	RhB	Metal-metal oxide Nanofibers	50 min	[7]
Fe@TiSi	1	MB (86.8%)	Tertiary core shell nanofibers	60 min	[8]
Ag-H:TiO_2 NFs	1	Brilliant Green (BG)	hydrogenated TiO_2 nanofibers decorated metal nanoparticles	100-150 min	[9]
AuAg-mTNF-H	1	MB	Mesoporous nanofibers with alloy nanoparticles	90 min	[10]
CuO-ZrO_2@PAN	4	MB (98%) BB (90%) CR (85%) RB (~75%)	Bi-metal oxide in electro spun Nanofibers	60 min	**Present work**

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