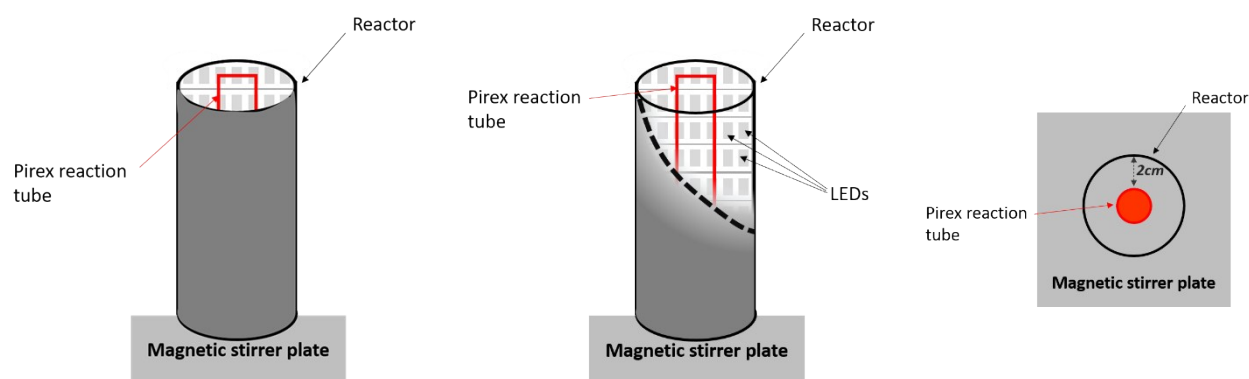


## ESI

# Valorization of pig bristles through the microwave assisted synthesis of photocatalytically active Chalcocite carbon composite

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### S.1 Schematic illustration of the photoreactor employed for degradation of methyl red

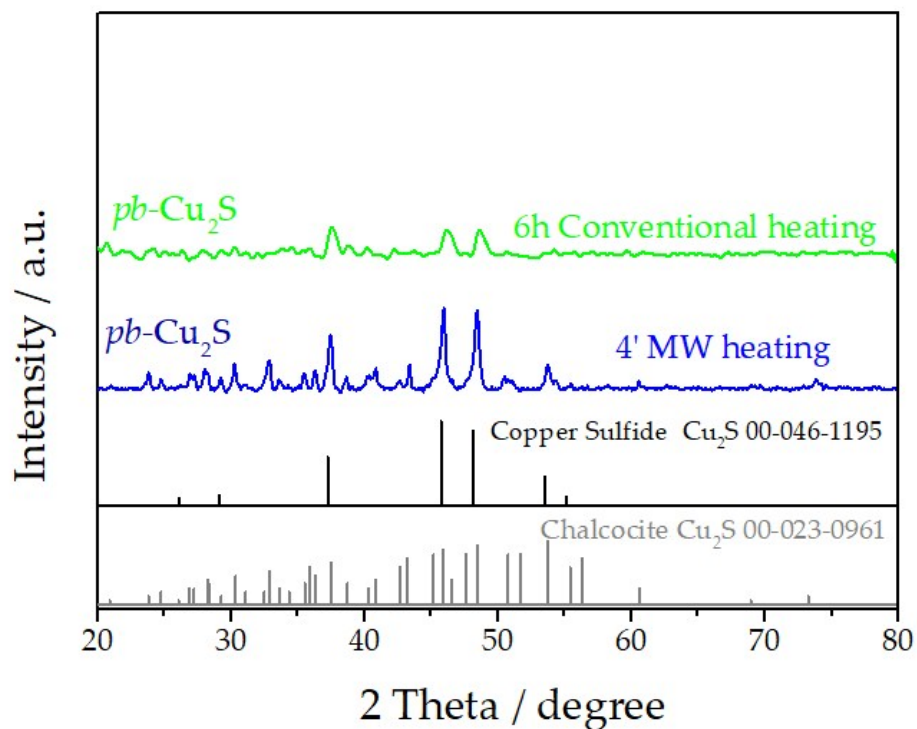


S.1 B Illustration of the photoreactor

S.1 B section of the photoreactor

S.1 C Top view of the reactor

### S.2 XRD patterns of *pb*-Cu<sub>2</sub>S synthesized by thermal vs MWs heating with 100 mg NaOH



### S.3 XRD peaks of *pb*-Cu<sub>2</sub>S

<i>pb</i> -Cu <sub>2</sub> S			Chalcocite, 00-023-0961					
	Pos. [°2Th.]	Intensity	h	k	l	d	Pos. [°2Th.]	Intensity
1	23,876	19,8	2	4	2	3,73	23,836	20
2	24,8053	10,57	3	0	2	3,59	24,78	16
3	27,309	13,81	4	2	0	3,27	27,25	25
4	28,1707	18,84	2	6	2	3,18	28,037	40
5	29,2486	14,15	2	4	3	3,05	29,258	20
6	30,2957	28,09	1	9	1	2,873	31,104	16
7	32,924	33,35	0	4	4	2,718	32,927	55
8	33,5561	9,13	2	2	4	2,659	33,679	25
9	35,4024	17,27	4	2	3	2,524	35,539	40
10	36,3388	22,3	4	3	3	2,469	36,358	45
11	37,4597	65,23	1	11	1	2,396	37,507	85
12	38,6774	14,92	1	7	4	2,325	38,697	40
13	40,8337	22,35	2	2	5	2,207	40,855	30
14	42,6074	8,52	4	4	4	2,117	42,675	12
15	43,3759	32,1	1	9	4	2,093	43,189	10
16	45,9566	100	2	13	1	1,977	45,863	100
17	48,463	92,33	2	14	0	1,876	48,486	90
18	50,7156	9,61	5	9	3	1,797	50,765	14
19	53,7104	28,73	4	0	6	1,704	53,751	35
20	58,2692	3,14	6	0	5	1,632	56,328	10
21	60,5742	5,51	4	8	6	1,526	60,634	25
23	69,3398	1,8	6	8	6	1,361	68,941	10
24	73,8131	9,77	0	20	3	1,291	73,263	20

#### S.4 SEM-EDX mapping results of *pb*-Cu<sub>2</sub>S

Element	Wt%	Wt% Sigma	Atomic %
C	20.01	0.62	49.84
O	4.73	0.21	8.85
S	12.73	0.19	11.88
Cu	62.52	0.55	29.43
Total:	100.00		100.00

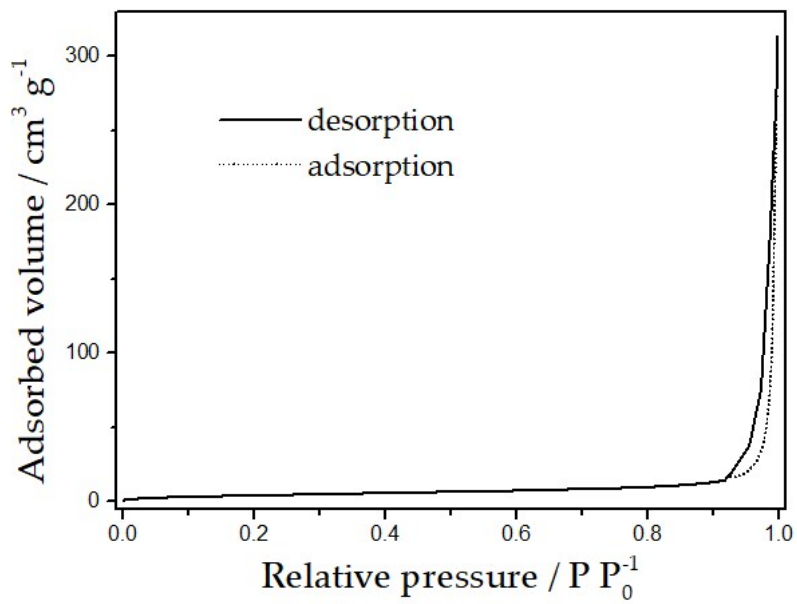
Element	Wt%	Wt% Sigma	Atomic %
C	20.73	0.66	51.31
O	4.51	0.23	8.38
S	11.58	0.19	10.74
Cu	63.19	0.59	29.57
Total:	100.00		100.00

Element	Wt%	Wt% Sigma	Atomic %
C	22.18	0.54	53.94
O	4.06	0.19	7.42
S	10.49	0.16	9.56
Cu	63.27	0.49	29.09
Total:	100.00		100.00

Element	Wt%	Wt% Sigma	Atomic %
C	15.53	0.75	42.74
O	3.14	0.22	6.49
S	16.51	0.27	17.03
Cu	64.82	0.65	33.74
Total:	100.00		100.00

Element	Wt%	Wt% Sigma	Atomic %
C	17.10	0.73	45.66
O	3.30	0.22	6.63
S	15.21	0.25	15.21
Cu	64.39	0.63	32.51
Total:	100.00		100.00

### S.5 N<sub>2</sub> adsorption-desorption isotherm of *pb*-Cu<sub>2</sub>S



### S.6 Photodegradation of methyl red catalysed by *pb*-Cu<sub>2</sub>S obtained with different amounts of NaOH.

