

SUPPORTING INFORMATION

Table A1. Crystallographic orientations, their identification parameters and texture coefficient of ZnO samples prepared using different fuels.

Crystallographic orientation	Crystal identification parameters and Texture coefficient	Catalyst code					
		ZC	ZD	ZG	ZO	ZOA	ZU
(1 0 0)	2 θ (degree)	31.79	31.98	31.77	31.81	31.78	31.99
	d spacing (Å)	2.81	2.80	2.82	2.81	2.82	2.80
	$\beta \times 10^4$ (rad)	19.58	19.58	35.90	19.58	29.37	26.11
	TC (h k l)	17.82	16.34	16.57	16.27	16.53	11.78
(0 0 2)	2 θ (degree)	34.40	34.61	34.44	34.47	34.43	34.62
	d spacing (Å)	2.61	2.59	2.60	2.60	2.60	2.59
	$\beta \times 10^4$ (rad)	19.58	22.85	22.85	19.58	32.64	19.58
	TC (h k l)	15.92	16.82	15.59	15.38	17.30	19.72
(1 0 1)	2 θ (degree)	36.24	36.46	36.28	36.30	36.29	36.46
	d spacing (Å)	2.48	2.46	2.48	2.47	2.48	2.46
	$\beta \times 10^4$ (rad)	29.37	32.64	26.11	19.90	32.64	35.90
	TC (h k l)	15.07	13.81	15.22	15.17	14.70	9.53
(1 0 2)	2 θ (degree)	47.60	47.75	47.57	47.59	47.58	47.73
	d spacing (Å)	1.91	1.90	1.91	1.91	1.91	1.90
	$\beta \times 10^4$ (rad)	58.73	65.26	22.85	15.92	45.68	15.92
	TC (h k l)	10.43	11.08	13.27	13.33	10.38	12.23
(1 1 0)	2 θ (degree)	56.65	56.71	56.62	56.65	56.60	56.78
	d spacing (Å)	1.62	1.62	1.63	1.62	1.63	1.62
	$\beta \times 10^4$ (rad)	58.73	58.73	19.58	15.92	26.11	26.11
	TC (h k l)	14.24	13.59	13.29	13.93	13.28	8.41
(1 0 3)	2 θ (degree)	62.83	62.98	62.89	62.92	62.88	63.03
	d spacing (Å)	1.48	1.48	1.48	1.48	1.48	1.47
	$\beta \times 10^4$ (rad)	58.73	45.68	15.92	19.90	32.64	23.88
	TC (h k l)	10.91	11.52	13.72	13.01	12.01	7.49
(1 1 2)	2 θ (degree)	66.47	66.45	67.98	68.01	66.37	66.59
	d spacing (Å)	1.41	1.41	1.38	1.38	1.41	1.40
	$\beta \times 10^4$ (rad)	45.68	78.31	26.11	23.88	39.17	65.26
	TC (h k l)	2.09	2.20	12.35	12.92	2.10	13.77

Table A2. Band gap energy, particle size, crystallite size and crystal parameters of various ZnO samples prepared using different fuels.

Catalyst code	Crystal size (D) (nm)	Crystal parameters			Strain (ϵ)	Band gap energy (E_g) eV	Particle radius (nm)
		Lattice parameters (\AA)		Volume of unit cell (\AA^3)			
		a	c				
ZC	41	3.2497	5.2141	47.69	0.00228	3.23	50
ZD	37	3.2474	5.2013	47.50	0.00250	3.25	39.5
ZG	68	3.2513	5.2066	47.66	0.00154	3.21	81
ZO	81	3.2174	5.2017	47.50	0.00116	3.20	296
ZOA	45	3.2518	5.2091	47.70	0.00192	3.16	44
ZU	56	3.2451	5.2103	47.52	0.00166	3.13	34

Table A3. Textural properties of the prepared ZnO catalysts.

Catalyst code	BET surface area (m^2/g)	External surface area (m^2/g)	BJH cumulative surface area of pores (m^2/g)	BJH cumulative volume of pores (cm^3/g)	BJH pore diameter (\AA)	Micro pore volume (cm^3/g)
ZC	13	12.25	13.78	0.017	50.46	0.00044
ZD	75	84.77	82.12	0.113	55.15	-
ZG	25	29.76	27.50	0.037	54.60	-
ZO	7	9.27	6.50	0.008	46.79	-
ZOA	18	20.67	20.80	0.026	49.27	-
ZU	4	6.56	4.15	0.005	46.44	-

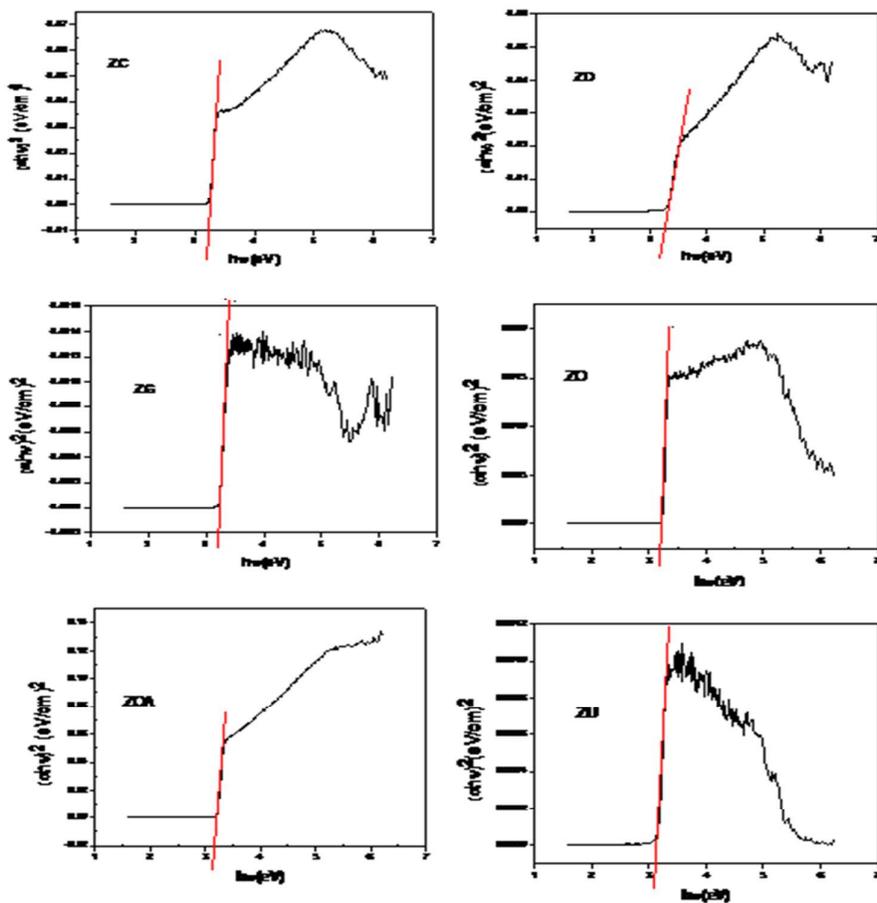


Figure A1. Tauc plots of zinc oxide particles prepared using different fuels.

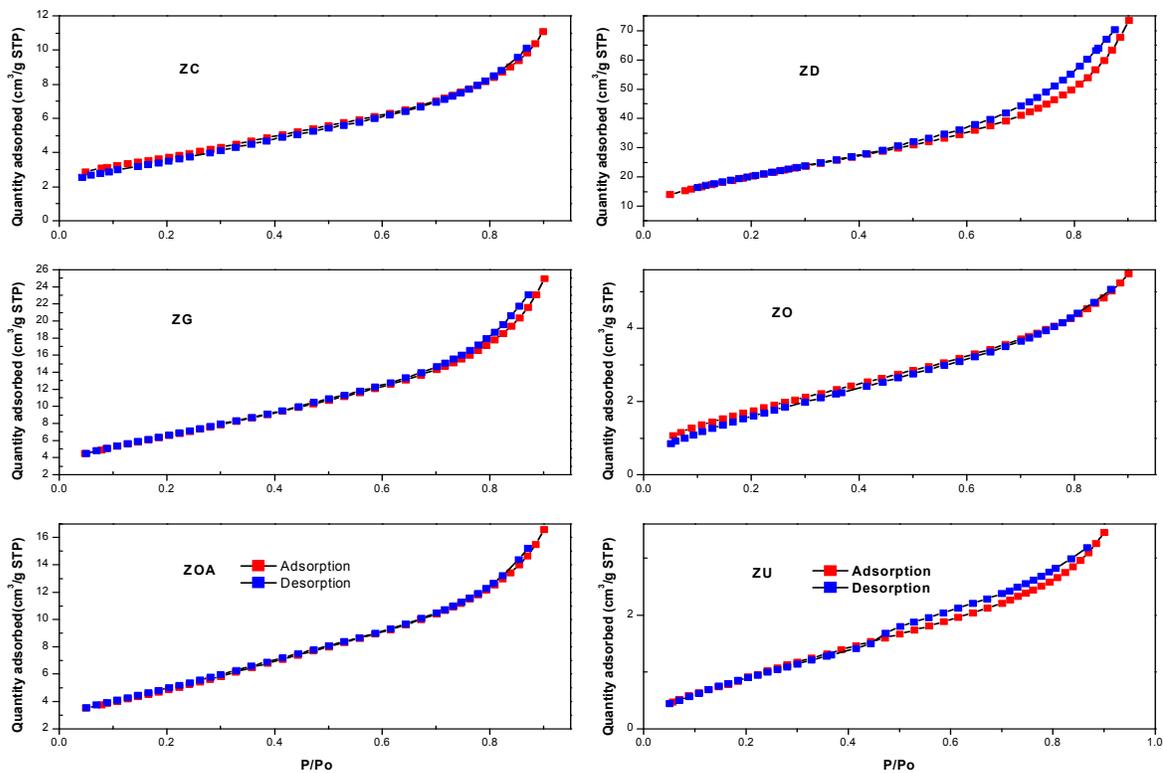


Figure A2. Adsorption/desorption isotherms of N_2 at 77K on different ZnO catalysts.