Supporting Information

for

Electrospun one-dimensional nanostructures: a new horizon for gas sensing materials

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Summary of electrospun materials and their gas sensing performance

Table S1: Different types of electrospun material based gas sensors.

	Electrospinning parameters											Sensing Performance					
Sensing Platform	**Polymer**	**Solvent**	**Precursor**	**Needle Type**	**Flow Rate**	**Applied Voltage (KV)**	**Working Distance (cm)**	**Post-treatment**	**Material**	**Morphology**	**Diameter**	**Response**	**Optimum Operating Temperature**	**Detection Range**	**Response/Recovery Time**	**Analyte Gas**	**Ref.**
Conductometric	PVP	DMF	$In(NO_3)_3{\cdot}xH_2O$	21-gauge needle	0.05 ml/h	20	22	600 °C for 2 h	CuO-In_2O_3 nanocomposite	NFs	40 nm	$1.16{\times}10^5$/5ppm	150 °C	5 ppm	-/140s	H_2S	[1]
Conductometric	PVP	DMF:ethanol (1:1)	$In(NO_3)_3{\cdot}4.5H_2O$	hypodermic syringe	1.0 ml/h	20	25	600 °C for 1 h	In_2O_3–SnO_2 composite	NFs	40-100 nm	8.1/1ppm	80 °C	1-8.1 ppm	1s/6s	Trimethyl amine	[2]
Conductometric	PVP	Ethanol, DMF	WCl_6	23SP	1 µl/min	14	10	300 – 500 °C for 1 h	WO_3	NFs	20-100 nm	12.4/400 ppb	75 °C	400 ppb	30s/32s	NO_2	[3]
Conductometric	Poly(styrene-co-acrylonitrile)	DMSO	zinc acetate	hypodermic syringe ID = 0.5 mm	1.0 ml/h	20	17	At 500 °C, 700 °C and 900 °C for 2 h	ZnO	NFs	60 nm	6/40 ppm	160 °C and 200 °C	40 ppm	--	NH_3	[4]
Conductometric	PVP	DMF:ethanol (1:1)	P-type $La_{0.7}Sr_{0.3}FeO_3$ NPs	hypodermic syringe	1.0 ml/h	10	20	600 °C for 5 h in air	L_4SnO_2	NFs	20 nm	28/1 ppm	300 °C	1 ppm	9s/15s	C_2H_5OH	[5]
Conductometric	PVAc	DMF	Tin (IV) acetate	stainless steel needle 25 gauge	5 µl/min	16.5	15	500 °C for 2 h in air	SnO_2	NFs	210± 35 nm	57/2.5 ppm 6.4/2.5 ppm	300 °C 150 °C	125 ppb-2.5 ppm	--	NO_2 H_2	[6]
Conductometric	PVP	Ethanol, DMF	$Co(NO_3)_2{\cdot}6H_2O$ and rGO	N7-gauge needle	0.2 ml/h	18.5	13.5	800 °C for 30 min	rGO-Co_3O_4 composite	NFs	200-300 nm	53.6%/50 ppm	20 °C	5 -100 ppm	4s/5 min	NH_3	[7]
Conductom	PVA	DI water	$In(CH_3COO)_3$	--	--	20	15	400 °C	In_2O_3	NFs	150-	~540%/10	300 °C	100	--	CO	[8]

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etric								, 500 °C or 600 °C in air for 3 h			200 nm	0 ppm		ppm			
Conductometric	PVP	Ethanol:DMF (1:3)	Indium nitrate ($In(NO_3)_3 \cdot xH_2O$),	stainless steel needle 21 G	1.5 ml/h	15	15	600 °C for 3 h in air	In_2O_3	NRbs	20-300 nm	~68.5/12ppm	200 °C	1 - 17 ppm	43min/93 min	NO_2	[9]
Conductometric	PVAc	DMF	Titanium (IV) propoxide	steel orifice (inner diameter of 450 µm	1.5 ml/h	1.5	10	three step 280 °C, 350 °C, and 420 °C each step 1 h	TiO_2	Porous nanostructured layer (nano-grains)	29-42 nm	~2/2 ppm CO ~3.25/2 ppm NO_2	450 ºC	0.25 - 2 ppm	Several min	CO and NO_2	[10]
Conductometric	PVP	DMF:ethanol (1:1)	$In(NO_3)_3 .4.5H_2O$	--	--	20	25	600 °C for 4 h in air	$In_{2-x}Ni_xO_3$	NFs	62 nm	7.2/500 ppb 107.7/10 ppm	70 °C and 130 °C	0.5 - 20 ppm	580s/650s	NO_2	[11]
Conductometric	PVP	DMF:ethanol (1:1)	$In(NO_3)_3$ and $Mg(NO_3)_2 \cdot 6H_2O$	23 G	--	15	15	600°C for 2 h in air	Mg-In_2O_3	NTs	80 nm	173.7/10 ppm	150 °C	0.5 - 10 ppm	--	H_2S	[12]
Conductometric	PANI /PMMA	THF	--	--	--	7	6	-	PAN/PMMA Composite	NFs	2.5-3.5 µm	1.38/1 ppm	RT	1–30 ppm	10s/-	NH_3	[13]
Conductometric	PVP, PAN	DMF	$SnCl_2 \cdot 2H_2O$	--	0.4 ml/h	20	15	500 °C for 4 h in air	SnO_2	NFs	80-400 nm	2.4/1 ppm	150 °C	0.06%	21s/333s	H_2	[14]
Conductometric	PVA	DI water	$SnCl_4 \cdot 5H_2O$	--	--	10	10	300, 500	SnO_2	NFs	100 nm	4.5/10 ppm	330 ºC	10 ppm	13s/13.9s	ethanol	[15]

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								and 700 °C for 4 h									
Conductometric	PVP	DMF:ethanol (1:1)	$Zn(NO_3)_2 .6H_2O$ and $SnCl_2 .2H_2O$	--	--	--	--	600 °C for 5 h	ZnO – SnO_2	HFs	150 nm	83/20 ppm	260 ℃	200 ppm	4-7s/4-5s	ethanol	[16]
Conductometric	PVP	DMF	$In(NO)_3 .4$ ½ H_2O and $Ce(NO)_3 .6H_2O$	--	--	16	--	600 °C for 3 h	In_2O_3 – CeO_2	NTs	OD 90-180 nm	498/20 ppm	80 ℃	20 ppm	64s/204s	H_2S	[17]
Conductometric	PVP	DMF	$In(NO)_3 .4$ ½ H_2O and $Al_2(NO)_3$	ID = 0.8 mm	0.25 ml/h	15	--	550 °C for 4 h in air	Al_2O_3 – In_2O_3	NTs	200 nm	0.47/291 ppb	RT	291 ppb-97 ppm	24s/--	NO_x	[18]
Conductometric	PVP	DMF:ethanol (1:1)	$In(NO_3)_3$ and $SnCl_2$	ID = 0.8 mm	0.004 ml/min	15	--	550 °C for 4 h in air	In_2O_3 – SnO_2	NRs	230 nm	8.98/100 ppm	RT	0.1-100 ppm	4.67s/--	NO_x	[19]
Conductometric	PVP	acetic acid and ethanol	$C_{16}H_{36}O_4Ti$ and $In(NO_3)_3.4.5H_2O$	0.8 mm	--	14	--	600 °C for 4 h in air	In_2O_3/TiO_2	NFs	200 nm	41.1%/97 ppm	RT	97 ppb – 97 ppm	3s/--	NO_x	[20]
Conductometric	PVP	DMF:ethanol (1:1)	$In(NO_3)_3$	--	--	15	--	500 °C for 2 h	In_2O_3	NTs NWs	--	23.46/100 ppm 14.22/100 ppm	280 °C	100 ppm	1s/57 s 1s/34 s	acetone	[21]
Conductometric	PVP	DMF and ethanol	$Fe(NO_3)_3 . 9H_2O$ and $Al(NO_3)_3 . 9H_2O$	--	--	13	--	550 °C for 4 h	Al-doped α-Fe_2O_3	NTs	OD 90	41.8/50 ppm	240 °C	300 ppb – 500 ppm	20s/60s	ethanol	[22]
Conductometric	PVP	DMF:ethanol (1:1)	$SnCl_2{\cdot}2H_2O$ and $AlCl_3{\cdot}6H_2O$	--	--	10	15	600 °C for 2 h	Al-doped SnO_2	NTs	OD 200	7.82/1000 ppb	240 °C	1000 ppb – 100 ppb	--	formaldehyde	[23]

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Conductometric	PVP	DMF:ethanol (1:1)	$In(NO_3)_3.4.5H_2O$ and H_2PtCl_6	ID = 0.8 mm		15	20	700 °C for 4 h	Pt doped In_2O_3	NFs	160–200 nm	1490/600 ppm	200 °C	50 ppm – 600 ppm	60s / 120s	H_2S	[24]
Conductometric	PVP	DMF	$In(NO_3)_3.4.5H_2O$ and $HAuCl_4$	--	--	22	20	550 °C	Au doped In_2O_3	NFs	80 – 100 nm	13.8/500 ppm	140 °C	10 ppm – 4000 ppm	12s/24s	ethanol	[25]
Conductometric	PVA	DI water	zinc acetate and $Ni(NO_3)_2$	--	--	8	20	650 °C for 3 h in air	Ni doped ZnO	NFs	100 nm	16.9/2000 ppm	250 °C	2000 ppm	5s/10 s	C_2H_2	[26]
Conductometric	PMMA	DMF, DI water, PDADMAC	$(NH_4)_6H_2W_{12}O_{40}\cdot xH_2O$ K_2PtCl_4 K_2PdCl_4	25G	0.2 ml/min	15	15	500 °C for 1 h in air	WO_3 Pt – WO_3,	NTs	1.57 µm – 3.37 µ	63.59/ 5 ppm toward NO 1.05/ 5 ppm toward toluene 4.22/ 5 ppm toward NO 2.74/5 ppm toward toluene	350 °C	50 ppb - 5ppm	--	NO, Toluene	[27]

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									Pd – WO_3			3.89/5 ppm toward NO 2.60/5 ppm toward toluene					
Conductometric	PVP	DMF and ethanol	$C_{16}H_{36}O_4Ti$	--	--	16	--	650 °C for 4 h in air	TiO_2	NRs	500 nm	20/1000 ppm	500 °C	50 - 500 ppm	11-14s/ 4-8s	acetone	[28]
Conductometric	PVP	DMF, Ethanol	$Zn(AC)_2{\cdot}2H_2O)$ And $Pr(NO_3)_3{\cdot}6H_2O$	--	--	17	20	600 °C for 3 h in air	Pr-doped ZnO	NFs	180 – 270 nm	3.71/100 ppm	380 °C	20 ppm – 800 ppm	51s/40s	acetic acid	[29]
Conductometric	PVP	DMF:ethanol (1:1)	$SnCl_2{\cdot}2H_2O$ and $ZnCl_2$	ID = 0.8 mm	20 µl/min	10	20	600 °C for 5 h in air	ZnO–SnO_2	NFs	100 – 200 nm	18 / 100 ppm	300 °C	1 - 10000	5s/6s	ethanol	[30]
Conductometric	PMMA	DMF	SWCNTs	--	0.1 – 1.5 ml/h	10 – 30	--	--	PMMA/CNTs	NFs	200–500 nm	1.3/2083 ppm	RT	1 – 3471 ppm	--	methanol	[31]
Conductometric	PVP	glacial acetic , ethanol, and water	$Zn(AC)_2.2H_2O$, hexamethylenetetramine and Tetrabutyl titanate	--	--	20	--	500 °C for 2 h in air	TiO_2/ZnO	(NSs on NFs) heterostructures	70 – 100 nm	15.7/100 ppm	280 °C	10 – 200 ppm	5s/3s	ethanol	[32]
Conductometric	PVP	DMF:ethanol (1:1)	$Zn(AC)_2.2H_2O$ and $PdCl_2$	0.25 mm	0.05 ml/h	18	20	600 °C for 3 h in air	Pd-doped ZnO	NFs	70 – 160 nm	5.5/20 ppm	220 °C	1 – 20 ppm	25-29s /12-17s	CO	[33]
Conductometric	PVP	DI Water	$(NH_4)_6H_2W_{12}O_{40}{\cdot}xH_2O$ and K_2PdCl_4	ID = 0.8 mm OD = 1.6	0.01 ml/ for core	30	15	600 °C for 1 h in air	Pd functionalized WO_3 NTs	NTs	--	17.6/500 ppm	450 °C	10 – 500 ppm	25s/ --	H_2	

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				mm+	and 0.03 – 0.1 ml/h for core												
Conductometric	PVP	DMF:ethanol (1:1)	$In(NO_3)_3$ and $Co(NO_3)_2.6H_2O$	--	--	15	20	500 °C for 2 h in air	Co–In oxide	NFs	50 – 90 nm	41.5/100 ppm	260 °C	1 – 100 ppm	3s/25 s	ethanol	[35]
										NTs	150 – 200 nm	93.1/100 ppm			3s/72 s		
Conductometric	PVA	DI water	$Zn(AC)_2$	0.51 mm	0.5 ml/h	10	20	700 °C for 2 h in air	ZnO	NFs	150 – 200 nm	15/5 ppm	300 °C	1 ppm – 5 ppm	--	CO	[36]
Conductometric	PMMA, PS, PPy	DMF	BPO	--	6 ml/h	8 – 9	10	--	PPy/PMMA	NFs	450 nm	14%/150 ppm	--	150 ppm	300s/-	NH_3	[37]
Conductometric	PCL	HCSA, HFIP	PANI	--	0.3 ml/h	5.8	55		PANI–PCL	NFs	150 nm	2.88%/ppm	--	1 – 75% saturation	--	H_2O vapours	[38]
												40.0%/ppm		0.5 ppm – 100 ppm		NH_3	
												251%/ppm		0.1 ppm – 10 ppm		NO_2	
Conductometric	PVP	Water, ethanol	$In(NO_3)_3.4.5H_2O$	ID = 0.45mm, OD = 0.5 mm	--	20	20	500 °C for 1 h and then 700 °C for 2 h	In_2O_3	NFs	50 – 150 nm	~3.7/30 ppm (V/v)	220 °C	1 ppm – 30 ppm	6s/10 s	ethanol	[39]
Conductom	PVP	$DMF:C_2H_5OH:CH_3$	$In(NO_3)_3·4.5H_2O$	--	0.4	15	15	600 °C	In_2O_3	NTs	100	11.9/50	240 °C	1 ppm	10s/1	HCHO	[40]

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etric		COOH			ml/h for inner core – 0.6 ml/h for outer core			for 3 h in air			nm – 1100 nm	ppm		– 800 ppm	5s		
Conductometric	PVP	DMF, ethanol	$ZnNO_3$ and chromium nitrate	--	--	12	15	600 °C for 5 h in air	Cr_2O_3-sensitized ZnO	NFs	80 nm – 130 nm	24/100 ppm	300 °C	1 ppm – 200 ppm	1s/5s	ethanol	[41]
Conductometric	PVAc	DMF, ethanol	$CuCl_2 \cdot 2H_2O$ and $SnCl_2 \cdot 2H_2O$	21G	0.03 ml/h	15	20	700 °C for 1h in air	CuO/SnO_2	Mixed NFs	110 nm	522/10 ppm	300 °C	10 ppm – 100 ppm	1s/305s	H_2S	[42]
Conductometric	PVP	DMF:ethanol (1:1)	$Co(NO_3)_2{\cdot}6H_2O$	21G	0.5 ml/h	20	15	500, 600, and 700 °C for 2 h in an air	Co_3O_4	NFs	100 nm – 200 nm	51.2/100 ppm	301 °C	5 ppm – 100 ppm	22.7s /2.4s	ethanol	[43]
Conductometric	PVP	DMF:ethanol (1:1)	$SnCl_2{\cdot}2H_2O$ and $PdCl_2$	--	--	20	10	600 °C for 2 h air	Pd-doped SnO_2	HNFs	200 nm – 300 nm	24.6/100 ppm	385 °C and 440 °C	1 – 500 ppm	0.4s/ 11.4s	H_2	[44]
												11.3/100 ppm			15.1s /4.7s	CO	
												8.5/500 ppm			0.8s/ 12.3s	CH_4	
												1020.6/100 ppm			1.0s/ 9.6s	C_2H_5OH	
Conductometric	PVP	DMF and ethanol	$In(NO_3)_3{\cdot}4.5H_2O$ and tetra-butyl titanate	--	0.25 ml/h	16	--	550 °C for 4 h in air	$TiO_2{-}In_2O_3$	Hemi-micelled NFs	150 nm – 250 nm	95/97 ppm	RT	0.3 ppm – 97 ppm	4.3s/--	NO_2	[45]

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Conductometric	PEO	DI water, CSA and methanol	PANI and $Zn(CH_3COO)_2$	--	0.4 ml/h	18	18	--	PANI/ZnO	NFs	200 nm – 300 nm	133.6/1000 ppm	36 °C	1000 ppm	150s/185s	LPG	[46]
Conductometric	PVP	DMF	$Zn(AC)_2{\cdot}H_2O$	--	--	20	20	600 °C for 3 h in air	ZnO	NFs	150 – 200 nm	51/100 ppm	270 °C	10 – 2000 ppm	7–9s/9 – 11s	ethanol	[47]
Conductometric	PVP	DMF:ethanol (1:1)	$Zn(NO_3)_2$. $6H_2O$ and $In(NO_3)_3$. $4.5H_2O$	--	0.4 ml/h	15	15	500 °C for 2 h in air	IZO	NTs	60 – 80 nm	81.8/100 ppm	275 °C	5 – 5000 ppm	2 – 6s/56 – 63s	ethanol	[48]
Conductometric	PVP	DMF:ethanol (1:1), ammonium persulfate (APS), and HCl	$In(NO_3)_3{\cdot}4.5H_2O$ and polyaniline	0.5 mm	0.5 ml/h	16	16	800 °C for 3 h in air	In_2O_3/PANI	NFs HNFs	850 nm	11.4/1000 ppm 52.4/1000 ppm	RT	100 ppm – 1000 ppm	--	NH_3	[49]
Conductometric	PVP	DMF and ethanol	$Zn(CH_3COO)_2{\cdot}H_2O$ and $Mn(CH_3COO)_2$	--	--	15	25	580 °C for 150 min in air	Mn-doped ZnO	NFs	60 nm – 90 nm	203.9/450 ppm	340 °C	50 ppm – 1000 ppm	6s/4s	acetone	[50]
Conductometric	PVP	DMF:ethanol (1:1)	$SnCl_2{\cdot}2H_2O$, $LaCl_3$	--	1 ml/h	20	--	600 °C for 2 h in air	LaOCl-doped SnO_2	NFs	180 nm	3.7/1000 ppm	300 °C	100 ppm – 20000 ppm	24s/92s	CO_2	[51]
Conductometric	PVP	DMF and ethanol	$Zn(NO_3)_2$	0.7 mm	--	22	--	500 °C for 3 h in air	ZnO	HNFs	60 nm	4.7/100 ppb 3.0/120 ppb	170 °C	10 ppb – 30 ppm	10s/-- 100s/--	Nitrotoluene Di-Nitrotoluene	[52]

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															1s/--	Nitromethane	
												29/30 ppm			1s/--	Nitroethane	
												83/30 ppm					
Conductometric	PVP	DMF:ethanol (1:1)	$SnCl_2{\cdot}2H_2O$ and $Al(NO_3)_3{\cdot}9H_2O$	1 mm	--	15	20	600 °C for 5h in air	Al-doped SnO_2	NFs	80 nm – 120 nm	7.7/100 ppm	340 °C	10 ppm – 30,000 ppm	3s/2s	H_2	[53]
Conductometric	PVP	DMF:ethanol (1:1)	$SnCl_2{\cdot}2H_2O$ and $Fe(NO_3)_3{\cdot}9H_2O$	--	0.4 ml/h	15	15	500 °C for 2 h in air	SnO_2-doped α-Fe_2O_3	NTs	65 nm	27.45/100 ppm 10.07/100 ppm	200 °C	5 ppm – 10,000 ppm	3s/14 s 4s/12 s	ethanol acetone	[54]
Conductometric	PEO	HCSA and $CHCl_3$	PANI	--	--	8	--	--	HCSA-doped PANI	NFs	20–150 nm	94/-- 94/-- 97/--	RT	--	32s/20s 20s/20s 110s/50s	methanol ethanol 2-propanol	[55]
Conductometric	PEO	--	PEDOT:PSSA	--	--	10	20	--	PEDOT-PSSA	NFs	5 nm – 50 nm	40%/128000 ppm 40%/60000 ppm 30%/13000 ppm 20%/23000 ppm 30%/150000 ppm	RT	--	8s/-- 10s/-- 20s/-- 240s/--	methanol ethanol 2-propanol H_2O	[56]

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												20%/247000 ppm			13s/--	NH_3	
												30%/1000 ppm			95s/--	HCl	
															120s/--	NO_2	
Conductometric	PVP	DMF	$In(NO_3)_3·4.5H_2O$	--	--	16	15	600 °C for 2 h in air	In_2O_3	NTs	80 nm	166.6/20 ppm	RT	1-100 ppm	287s/636s	H_2S	[57]
										NWs	120 nm	141/20 ppm			199s/317s		
Conductometric	PVP	DMF and ethanol	$In(NO_3)_3$ and $Fe(NO_3)_3$	--	--	15	20	550 ºC fir 2 h	Fe_2O_3-In_2O_3 composite	NTs	200 nm	33/100 ppm	240 °C	1-100 ppm	5s /25s	formaldehyde	[58]
Conductometric	PVP	DMF	$Zn(CH_3COO)_2·2H_2O$ and $In(NO_3)_3·xH_2O$	25 G	0.01 ml/h	17	15	600 °C for 2 h in air	ZnO-In_2O_3 composite	NFs	--	119.4/5 ppm	375 °C	0.05 - 5 ppm	1-2s/1603s	trimethylamine	[59]
Conductometric	PVP	DMF	$SnCl_2.2H_2O$ and $In(NO_3)_3.4.5H_2O$	--	0.1 ml/h	15	15	350 °C for 1h - 600 °C for 3 h in air	SnO_2/In_2O_3	NTs	80 – 120 nm	400/500 ppm	300 °C	250 ppb-500 ppm	60s/97s	formaldehyde	[60]
Conductometric	PVP	DMF and ethanol	$SnCl_2·2H_2O$ and $In(NO_3)_3·41/2H_2O$	--	--	--	5	600 ºC for 2 h in air	SnO_2/In_2O_3 composite	NFs	200 – 250 nm	35.69/50 ppm	290 °C	0.5 ppm – 50 ppm	20s/40s	formaldehyde	[61]
Conductometric	PVP	ethanol and glacial acetic	tetrabutyl titanate and $Zn(Ac)_2·2H_2O$	--	--	20	--	500 °C for 2 h in air	ZnO-TiO_2	NFs	100 - 300 nm	50.6 /500 ppm	320 ºC	20-500 ppm	50.6s /5 - 10s	ethanol	[62]
Conductometric	PVP	DMF, ethanol and Acetic Acid	tungsten chloride and	ID = 1.01 mm	0.5 ml/h	20	15	500 °C for 2 h	In_2O_3 - WO_3	NFs	170 nm	12.9/50 ppm	275 ºC	0.4 ppm –	6s/64 s	acetone	[63]

	Electrospinning parameters											**Sensing Performance**					
Sensing Platform	**Polymer**	**Solvent**	**Precursor**	**Needle Type**	**Flow Rate**	**Applied Voltage (KV)**	**Working Distance (cm)**	**Post-treatment**	**Material**	**Morphology**	**Diameter**	**Response**	**Optimum Operating Temperature**	**Detection Range**	**Response/Recovery Time**	**Analyte Gas**	**Ref.**
			$In(NO_3)_3{\cdot}4.5H_2O$					in air						50 ppm			
Conductometric	PVP	DMF:ethanol (1:1)	$In(NO_3)_3{\cdot}4.5H_2O$ and $Sn(OH)_4$	--	1.0 ml/h	20	25	500 °C for 2 h in air	SnO_2/In_2O_3	NFs	30 – 80 nm	21/1 ppm	RT	0.1 ppm-1 ppm	7s/10 s	NH_3	[64]
Conductometric	--	DMF	PMMA and PANI	hyperdermic needle	0.2 ml/h	20	15	--	PANI/PMMA composite	NFs	400 - 600 nm	77/500 ppm	RT	20-500 ppm	131s/600s	Triethylamine	[65]
Conductometric	PANI/PA6	Formic acid	TiO_2 (sputtered)	--	--	--	--	--	TiO_2-PANI/PA6	NFs	--	18.3/250 ppm	RT	50 ppm – 250 ppm	--	NH_3	[66]
Conductometric	PVP	Acetylacetone, DI water and ethanol	titanium(IV) butoxide	--	--	20	15	600 °C for 3 h	PANI/TiO_2 composite	NFs	72-90 nm	--	RT	25 - 200 ppb	--	NH_3	[67]
Conductometric	PVP	acetic acid and ethanol	EDOT $Ti(OiPr)_4$	23 G	0.3 ml/h	7	5	500 °C for 3 h	TiO_2-PEDOT	Core-sheath nanocable	Core = ~78 nm	0.86%/300 ppb	RT	7-300 ppb	--	NO_2	[68]
												0.222%/1o ppm		675 ppb-10 ppm	--	NH_3	
Conductometric	PVB	DMF and ethanol	$SnCl_2{\cdot}2H_2O$	ID = 0.7 mm	0.2 ml/h	8	15	--	SnO_2 /PPy	NFs	100-200 nm	~6.2%/ppm In range of 1-10.7 ppm	RT	~257 ppb-10.7 ppm	259s/468 s	NH_3	[69]
Conductometric	PAN	DMF	$SnCl_2.2H_2O$	--	--	15	20	800 °C	SnO_2-carbon	NFs	150 - 500 nm	~16.3/100 ppm	200 °C	100-35,000 ppm	4s/16s	H_2	[70]
Conductometric	PAN	DMF	$SnCl_4.5H_2O$	ID = 0.5 mm	0.4 ml/h	10	20	270 °C for 2 h	Sn-SnO_2/car	NFs	350-400	46.15/1000 ppm	240 °C	10-2000	--	ethanol	[71]

	Electrospinning parameters											Sensing Performance					
Sensing Platform	Polymer	Solvent	Precursor	Needle Type	Flow Rate	Applied Voltage (KV)	Working Distance (cm)	Post-treatment	Material	Morphology	Diameter	Response	Optimum Operating Temperature	Detection Range	Response/Recovery Time	Analyte Gas	Ref.
								in air, and 800 °C for 30 min in Ar	bon		nm			ppm			
Conductometric	PVA	DI Water	$(CH_3CO_2)_2Zn$ and rGO	21 G	0.03 ml/h	15	20	500 °C for 5 h in air	rGO-ZnO	NFs	150 nm	119/5 ppm	400 ºC	1 ppm	143s/ 259s	NO_2	[72]
Conductometric	PVAc	DMF and ethanol	$SnCl_2.2H_2O$ graphene	--	--	--	--	600 °C for 30 min in air	rGO-SnO_2	NFs	200 - 300 nm	3.13/1ppm	300 °C	1 ppm	51.2 s/330 s	C_7H_8	[73]
Conductometric	PVAc	DMF and ethanol	$SnCl_2.2H_2O$ GO $PdCl_2$ H2PtCl6.$n$$H_2O$	ID = 0.51 mm	0.03 ml/h	15	20	600 ºC for 30 min in air	SnO_2	NFs	--	1.6/1 ppm	200 °C	1 ppm- 5 ppm	--	C_6H_6	[74]
									rGO-SnO_2			3.3/1 ppm				C_6H_6	
									rGO-Pd-SnO_2			8.3/1 ppm				C_6H_6	
									rGO-Pt-SnO_2			255.5%/1 ppm				C_7H_8	
Conductometric	PVP	DMF and ethanol (2:1)	$SnCl_2.2H_2O$ rGO	--	--	--	--	450 °C for 2 h in air	rGO/SnO_2	NFs	--	32.2/10 ppm	150 °C	--	6 min/30 min	NO_2	[75]
SAW	PEO	DI Water and ethanol	polyethylene glycol (PEG)	--	--	27	25	--	PEO	NFs	100 – 300 nm	-4 Hz/MHz /30%	RT	10% - 90% saturated vapours	60 – 120 s/60 s	Isopropanol	[76]
												-20 Hz/MHz /30%				nitrobenzene	
												-32 Hz/MHz /30%				toluene	
												-30 Hz/MHz /30%				hydrogen peroxide	

	Electrospinning parameters											Sensing Performance					
Sensing Platform	**Polymer**	**Solvent**	**Precursor**	**Needle Type**	**Flow Rate**	**Applied Voltage (KV)**	**Working Distance (cm)**	**Post-treatment**	**Material**	**Morphology**	**Diameter**	**Response**	**Optimum Operating Temperature**	**Detection Range**	**Response/Recovery Time**	**Analyte Gas**	**Ref.**
SAW	--	DMF	PVB	--	0.5 ml/h	6	15	--	PVB	NFs	--	0.425 MHz/90% RH	RT	10 %-90% RH	--	Humidity	[77]
		Chloroform	PEO	--	0.5 ml/h	4	15		PEO			3.428 MHz/90% RH					
		Ethanol	PVP	--	0.5 ml/h	6	15		PVP			8.134 MHz/90% RH					
		DMF	PMMA	--	1 ml/h	6	12		PMMA			0.312 MHz/90% RH					
		DMF	PVDF	--	1 ml/h	6	12		PVDF			0.334 MHz/90% RH					
SAW	PANI	DMF	PVB	--	0.5 ml/h	10	12	100 °C for 2 h	PANI/PVB	NFs	100-200 nm	~75 kHz/%RH from 20 to 90%RH	RT	0.5%-90% RH	1s/2s	Humidity	[77]
SAW	PVP	ethanol	CeO_2	--	--	12	12	65 °C for 12 h	CeO_2-PVP	NFs	450 nm	-2.5 MHz/from 11% to 95% RH	RT	11%-95% RH	~16s/16s	Humidity	[78]
SAW	PVP	DI water	PVP	--	--	12	8.5	--	PVP	NFs	340 nm	5.6kHZ/1%	RT	0.125-1%	10s/200s	Hydrogen	[79]
SAW	PVP	alcohol	MWCNTs, Nafion	--	0.2 ml /h	15	10	--	MWCNTs/Nafion	NFs	--	400 kHz/%RH in the range of 10%-80% RH	RT	1%-80%RH	3s/--	humidity	[80]
QCM	PVP	ethanol	PVP	--	100 µl/h	19	10	--	PVP	Fs	7-12 µm	~220 Hz/5 mg/l	RT	5-30 mg/l	500s/2700 s	ethanol	[81]
QCM	PEI, PS	Water, ethanol,	PS, PEI	--	4	20	15	dried	PEI-PS	NFs	110 -	19	RT	3-140	--	formaldeh	[82]

	Electrospinning parameters											Sensing Performance					
Sensing Platform	**Polymer**	**Solvent**	**Precursor**	**Needle Type**	**Flow Rate**	**Applied Voltage (KV)**	**Working Distance (cm)**	**Post-treatment**	**Material**	**Morphology**	**Diameter**	**Response**	**Optimum Operating Temperature**	**Detection Range**	**Response/Recovery Time**	**Analyte Gas**	**Ref.**
		THF, DMF			ml/h			at 25 °C in vacuum for 2 h			870 nm	Hz/140 ppm		ppm		yde	
QCM	PS	Water, ethanol, THF, DMF	PEI, PA 6	--	1 ml/h	20	15	dried at 25 °C in vacuum for 12 h	PEI-PA 6	NFN	26 nm	52.8 Hz/100 ppm	RT	50 ppb-100 ppm	100s/--	formaldehyde	[83]
QCM	PVA	H_2O and ethanol	PAA	--	--	20	5	--	PAA/PVA	NFs	350 nm	60 Hz /1 ppm	RT	130 ppb-200 ppm	10min/60min	NH_3	[84]
QCM	PS-*b*-PMA	Acetone and DMF	PS-*b*-PMA	--	0.8 ml/h	25	19	dried in vacuum at RT for 1 h	PS-*b*-PMA	NFs	261-744 nm	28.2 Hz/50 ppm	RT	1.5-50 ppm	--	NH_3	[85]
QCM	PA and PS	DMF and ethanol	--	--	1 ml/h	25	19	dried for 1 h at 70 °C in vacuum	PA/PS	NFs	488 nm	2.1 Hz/25 ppm	RT	1.5-50 ppm	--	NH_3	[86]
QCM	PVA and PAA	DI water	--	--	--	15	10	dried at 80 °C in vacuum for 2 h	PVA-PAA	NFs	200-330 nm	40 Hz/50 ppm at 0%RH 330 Hz/50 ppm at 60%RH	RT	50-200 ppm	--	NH_3	[87]

	Electrospinning parameters											**Sensing Performance**					
Sensing Platform	**Polymer**	**Solvent**	**Precursor**	**Needle Type**	**Flow Rate**	**Applied Voltage (KV)**	**Working Distance (cm)**	**Post-treatment**	**Material**	**Morphology**	**Diameter**	**Response**	**Optimum Operating Temperature**	**Detection Range**	**Response/Recovery Time**	**Analyte Gas**	**Ref.**
QCM	PS	THF, DMF, acetic acid and ethanol	titanium tetraisopropoxide, PEI	--	4 ml/h	20	20	at 450 °C for 5 h in air	PEI-TiO_2	NFs	625 nm	13.7/100 ppm	RT	1-100 ppm	120s/--	formaldehyde	[88]
QCM	PS	THF, DMF and DI water	carboxyl graphene (G-COOH), PS	--	1 ml/h	25	19	dried at 80 °C in vacuum for 1 h	G-COOH/PS	NFs	569 nm	3.5 Hz/40 ppm	RT	1-40 ppm	--	NH_3	[89]
Optical (photoluminescence spectroscopy)	PAN	DMF	--	0.7 mm	3 ml/h	25	25	--	PAN/ZnO	NFs	250-350 nm	NBE= 0.83 ± 0.04 DLE= 1.31 ± 0.03	RT	150 ppm	--	ethanol	[90]
Optical (FTIR spectroscopy)	PAN	--	Fe_2O_3, ZnO, Sb-SnO_2 NPs	--	--	--	--	--	PAN-MOx	NFs	50 - 150 nm	Highest response for PAN-Fe_2O_3	RT	2000 ppm	--	CO_2	[91]
Optical (fluorescence quenching)	PS	DMF	**P**	--	0.6 ml/h	25	25	40 °C for 12 h	**P**	NFs	800 - 1000 nm	fluorescence quenching efficiency is PA>TNT>DNT>NB with values of 85%, 65%, 25% and 12%	RT	0.5-3 mM	--	PA, TNT, DNT, NB	[92-93]
Optical (absorbance)	PAA	water	--	--	1 ml/h	18.5	22	--	PAA	NFs	0.59± 0.15 µm	2 dB/95% RH	RT	30%-95%	340ms/210 ms	Humidity	[94]

	Electrospinning parameters											Sensing Performance					
Sensing Platform	**Polymer**	**Solvent**	**Precursor**	**Needle Type**	**Flow Rate**	**Applied Voltage (KV)**	**Working Distance (cm)**	**Post-treatment**	**Material**	**Morphology**	**Diameter**	**Response**	**Optimum Operating Temperature**	**Detection Range**	**Response/Recovery Time**	**Analyte Gas**	**Ref.**
Optical (fluorescence intensity)	--	HFP, DCM, Toluene	PCL, PDMS	--	1 ml/h	25	20	--	PDMS - PCL	Core-shell NFs	570± 192 nm	24/100%	RT	20-100%	0.49 ± 0.13s /0.70 ± 0.15s	oxygen	[95]
Optical (luminescence)	PS	2-butanone, cationic surfactant hexadecyl-trimethyl ammoniumbromide	PtTFPP	a hypodermic needle with ID = 0.2 mm	0.5 ml/min	10	10	80 ºC at 1 mbar for 1 h	PtTFPP	Band like	Width:620 nm thickness: 100 nm	--	RT	100%	2.2s/--	oxygen	[96-97]
Optical (fluorescence intensity)	PPI	DMAc	--	--	1 ml/h	16	12	60 °C	PPI	NFs	350 ± 54nm	~0.95 a.u./50 ppm	RT	1.25 ppm – 100 ppm	10s/--	HCl	[98]

PVA (polyvinyl alcohol); PEI (Polyethyleneimine); PANI (polyaniline); PMMA (Polymethyl methacrylate); PS (polystyrene); PVP (Polyvinylpyrrolidone); PAA (polyacrylic acid); PAN (Polyacrylonitrile); DMF (Dimethyl Formamide); DMSO (Dimethyl Sulfoxide); THF (Tetra Hydro Furan); PA polymer (Phenyl acetic acid); PPy (polypyrrole); PPI (porphyrinated polyimide); PCL (polycaprolactone); BPO (benzoyl peroxide); HCSA (Camphorsulfonic acid); PEO (polyethylene); CSA ((±)-10-camphorsulfonic acid); LPG (liquefied petroleum gas); HCl (hydrochloric acid); RT (room temperature); DI (distilled water); OD (outer diameter); ID (inner diameter); NFs (nanofibers); NTs (nanotubes); NWs (nanowires); HNFs (hollow nanofibers); NSs (nanosheets); NRs (nanorods); NRbs (nanoribbons); HFs (hollow fibers); rGO (reduced graphene oxide); RH (relative humidity); MWCNTs (multi carbon nanotubes); CNTs (carbon nanotubes); NFN (nanofiber net); NBE (near band emission); DLE (deep level emission); PA (picric acid), TNT (trinitrotoluene), DNT (2,4-dinitrotoluene), NB (nitrobenzene); **P** (benzothiophene based conjugated polymer with sulfur-containing fused rings as the backbone); HFIP (1,1,1,3,3,3-hexafluoro-2-propanol); DCM (Dichloromethane);

PtTFPP (platinum-tetra(pentafluorophenyl) porphyrine); PEDOT (polyethylenedioxythiophene); PSSA (poly(styrene sulfonic acid)); PVB (poly(vinyl butyral)); PVDF (poly(vinylidene fluoride)); DMAc (*N*,*N′*-Dimethyl acetamide)

Table S2: Sensing performance of electrospun pure MOx nanofibers categorized based on the analyte gas.

Material	Morphology	Diameter (nm)	Operating Temperature (°C)	Response	Analyte gas	Response /Recovery time	Reference
TiO_2	NFs	400 – 500	200	4.4/25 ppm	CO	32–86 s/ 84–109 s	[99]
TiO_2	NFs	350 – 500	180	3.4/25 ppm	CO	32–86 s/ 84–109 s	[100]
TiO_2	HNFs	200	RT	Rg 70K/0.1 ppm	CO	-	[101]
SnO_2	NFs	200 – 400	300	3.8/500 ppm	CO	260 s/15 min	[102]
ZnO	NFs	35 – 150	200	1.51/2 ppm	CO	168–237 s/270–350 s	[103]
In_2O_3	NFs	100	300	~540%/100 ppm	CO	-	[8]
TiO_2	NRs	500	500	9.0/10 ppm	Acetone	11–14 s/4–8 s	[28]
WO_3	NFs	275	270	55.6/50 ppm	Acetone	6-13 s/4-9 s	[104]
WO_3	NTs	200	250	19.7/40 ppm	Acetone	5 s/22 s	[105]
SnO_2	NBs	140	260	6.7/5 ppm	Acetone	38 s / 9 s	[106]
ZnO	HNFs	145	220	7.1/1 ppm	Acetone	12–17 s/11–23 s	[107]
ZnO	NTs	95	500	12.3/2000 ppm	Acetone	5 s/10 s	[108]
In_2O_3	HNFs	250 – 310	300	151/5 ppm	Acetone	5 s/2 s	[109]
TiO_2	NFs	120 – 200	450	30/50 ppm	NO_2	2–4 min/20 s	[110]
WO_3	NFs	100	75	12.4/400 ppb	NO_2	33 min/38 min	[3, 110-111]
SnO_2	NFs	200 – 400	185	368/50 ppm	NO_2	400 s/200 s	[102, 105]
SnO_2	HNFs	300–500	300	81.4/2 ppm	NO_2	55 s/5 min	[3, 111-112]
In_2O_3	NRs	20 – 300	200	~68.5/12 ppm	NO_2	43 min/93 min	[9, 104]
α-Fe_2O_3	NFs	150 – 280	300	2.3/100 ppm	Ethanol	3 s/5 s	[105, 113]
SnO_2	NTs	200	300	76/500 ppm	Ethanol	12 s/8 s	[113-114]
SnO_2	NFs	100	330	4.5/10 ppm	Ethanol	13 s/13.9 s	[14-15]

Material	Morphology	Diameter (nm)	Operating Temperature (ºC)	Response	Analyte gas	Response /Recovery time	Reference
In_2O_3	NFs	160 – 200	300	379/15000 ppm	Ethanol	1 s/5 s	[114-115]
In_2O_3	NFs	30 – 100	220	~3.75/30 ppm	Ethanol	6 s/10 s	[39, 106]
Co_3O_4	NFs	100 – 200	301	51.2/100 ppm	Ethanol	7.9s-22.7 s/58.7s-2.4 s	[43]
SnO_2	NTs	80 – 400	150	2.4/1.0 ppm	H_2	21 s/333 s	[14-15]
ZnO	NTs	200	200	3.6/100 ppm	H_2	20 min/10 min	[102, 116]
ZnO	NFs	250	350	109.1/10 ppm	H_2	-	[102, 117]
ZnO	NFs	500 – 600	RT	12.61/100 ppm	Formaldehyde	32 s/17 s	[107, 118]
In_2O_3	NFs	150 - 200	340	3.11/100 ppm	Formaldehyde	18 s/17 s	[118-119]
In_2O_3	NWs	120	RT	141.1/20 ppm	H_2S	199 s/317 s	[57]
In_2O_3	NTs	80	RT	166.6/20 ppm	H_2S	287 s/636 s	[57]
In_2O_3	NTs	370	340	5.88/40 ppm	Toluene	3 s/17 s	[39, 120]
WO_3	NFs	200	200	5.5/100 ppm	NH_3	1 s/5 s	[105]

NBs (nanobelts)

Table S3: Sensing performance of electrospun metal doped MOx nanofibers categorized based on the analyte gas.

Material	Structure (NTs/NFs/HNFs/NRs/NWs)	Dopant	Temperature (°C)	Response	Detection Limit	Response/recovery time	Analyte gas	Reference
SnO_2	HNFs	Y	300	174/500 ppm	50 ppm	9-30s/6-9s	Acetone	[22, 121]
SnO_2	HNFs	Ni	340	64.9/100 ppm	2 ppm	7s/30s	Acetone	[122]
SnO_2	NFs	Pd	275	98.8/100 ppm	1 ppm		Acetone	[123]
SnO_2	HNFs	Ag	160	117/200 ppm	5 ppm	6s/10s	Acetone	[124]
α-Fe_2O_3	NTs	La	240	26/50 ppm	1 ppm	3s/10s	Acetone	[125]
α-Fe_2O_3	NTs	Nd	240	44/50 ppm	500 ppb	19s/50s	Acetone	[126]
α-Fe_2O_3	NTs	Sm	240	33/50 ppm	500 ppb	6s/11s	Acetone	[127]
α-Fe_2O_3	NTs	Ce	240	21.5/50 ppm	1 ppm	3s/8s	Acetone	[128]
α-Fe_2O_3	NTs	Ca	200	24.9/100	5 ppm	1s/3s	Acetone	[129]
ZnO	NFs	Ce	230	71.2/500 ppm	10 ppm		Acetone	[130]
ZnO	HNFs	Ce	260	75.04/100 ppm	5 ppm	-	Acetone	[131]
ZnO	NFs	Mn	340	76.2/50 ppm	50 ppm	17s/4s	Acetone	[132]
ZnO	NFs	Co	360	16/100 ppm	5 ppm	6s/4s	Acetone	[133]
ZnO	NFs	La	340	64/200 ppm	-	16s/8s	Acetone	[134]
WO_3	NFs	La_2O_3	350	12.7/100 ppm	0.8 ppm		Acetone	[135]
WO_3	HNFs	Cu	300	6.43/20 ppm	0.25 ppm	5s/20s	Acetone	[136]
WO_3	Hemitube	Pt	350	4.11/2 ppm	120 ppb	-	Acetone	[137]
In_2O_3	NTs	Eu	240	20/20 ppm	200 ppb	3s/90s	Acetone	[138]
α-Fe_2O_3	NTs	Al_2O_3	240	41.8/50 ppm	300 ppb	20s/60s	Ethanol	[22]
α-Fe_2O_3	NTs	Ca	200	26.8/100	5 ppm	1s/26s	Ethanol	[129]
SnO_2	NFs	Cu	300	56/500 ppm	5 ppm	1s/10s	Ethanol	[139]
SnO_2	HNFs	Pr	300	64.33/200 ppm	1 ppm	116s/11s	Ethanol	[140-141]
SnO_2	NFs	Sr	260	18.9/100 ppm	-	2s/8s	Ethanol	[142]

Material	Structure (NTs/NFs/HNFs/NRs/NWs)	Dopant	Temperature (°C)	Response	Detection Limit	Response/recovery time	Analyte gas	Reference
SnO_2	HNFs	Yb	340	170/500 ppm	-	7s/8s	Ethanol	[139, 143]
SnO_2	HNFs	Ce	250	~265/50 ppm	-	-	Ethanol	[144]
SnO_2	NFs	Fe	300	15.3/100 ppm	10 ppm	1s/3s	Ethanol	[145]
SnO_2	NFs	Co	300	40.1/100 ppm	2 ppm	-	Ethanol	[146]
ZnO	NTs	In	275	81.7/100 ppm	-	-	Ethanol	[48]
ZnO	NFs	Er	240	37.3/200 ppm	1 ppm	12s/3s	Ethanol	[132]
ZnO	NFs	Al	250	8.6/100 ppm	-	5s/9s	Ethanol	[11]
ZnO	NFs	Cr_2O_3	300	24/100 ppm	1 ppm	1s/5s	Ethanol	[41]
In_2O_3	NWs	Co	300	16.5/100 ppm	-	2s/3s	Ethanol	[140, 147]
In_2O_3	NFs	Pd	200	18/50 ppm	1 ppm	1s/10s	Ethanol	[148-149]
In_2O_3	NTs	Mg	250	25.82/100 ppm	-	-	Ethanol	[12, 150]
In_2O_3	NTs	Eu_2O_3	260	44/50 ppm	0.2 ppm	3s/21s	Ethanol	[151]
In_2O_3	NFs	Au	140	13.8/500 ppm	50 ppm	12s/24s	Ethanol	[25]
SnO_2	NFs	Co_3O_4	300	38/100 ppm	-	-	Ethanol	[152]
NiO	NTs	Pt	400	11.7/100 ppm	1 ppm	-	Ethanol	[153]
ZnO-SnO_2	HNFs	Ag	200	128.6/100 ppm	1 ppm	-	Ethanol	[154]
α-Fe_2O_3	NWs	Pt	175	157/10 ppm	-	-	H_2S	[141]
ZnO	NFs	Cu	230	18.7/10 ppm	-	18s/20s	H_2S	[143, 155]
In_2O_3	NTs	Mg	150	173.14/10 ppm	-	-	H_2S	[12, 121]
In_2O_3	NFs	V	90	13.9/50 ppm	-	15s/18s	H_2S	[144, 156]
In_2O_3	NFs	Pt	200	1490/600 ppm	50 ppm	60s/120s	H_2S	[24]
SnO_2	HNFs	CuO	125	410/10 ppm	-	-	H_2S	[157]
SnO_2	NFs	Pt	300	5100/20 ppm	-	-	H_2S	[150]
WO_3	NFs	Pd	350	1.36/1 ppm	1 ppm	-	H_2S	[158]
TiO_2	NFs	Ag	350	~120/1 ppm	1 ppm	-	H_2S	[159]

Material	Structure (NTs/NFs/HNFs/NRs/NWs)	Dopant	Temperature (°C)	Response	Detection Limit	Response/recovery time	Analyte gas	Reference
SnO_2	NTs	Al	240	7.82/1000 ppb	-	-	Formaldehyde	[23]
SnO_2	HNFs	Pd	160	18.8/100 ppm	-	2s/7s	Formaldehyde	[160]
In_2O_3	NTs	Er	260	12/20 ppm	100 ppb	5s/38s	Formaldehyde	[122, 161]
In_2O_3	Ruptured NTs	Nd	240	46.8/100 ppm	100 ppb	8s/22s	Formaldehyde	[162]
In_2O_3	NTs	Nd	240	44.6/100 ppm	100 ppb	15s/50s	Formaldehyde	[163]
In_2O_3	NTs	Sm	240	54.37/100 ppm	100 ppb	9s/40s	Formaldehyde	[164]
In_2O_3	NFs	Ag	115	28/50 ppm	5 ppm	5s/10s	Formaldehyde	[165]
α-Fe_2O_3	NTs	SnO_2	220	25.4/500 ppm	1 ppm	-	Formaldehyde	[166]
SnO_2	NFs	V_2O_5	325	6.32/25 ppm	-	-	benzene	[167]
SnO_2	NFs	Al	340	7.7/100 ppm	10 ppm	-	H_2	[53]
SnO_2	NFs	Co	330	24/100 ppm	-	2s/3s	H_2	[149]
ZnO	NFs	Pr	380	7.38/400 ppm	-	51s/40s	acetic acid	[29]
ZnO	NFs	Ni	250	16.9/2000 ppm	-	5s/10s	C_2H_2	[26]
SnO_2	NFs	Au	300	18.98/10 ppm	1 ppm	-	CO	[168]
SnO_2	NFs	Au	300	84/5ppm	-	22s/235s	CO	[169]
ZnO	NFs	Pd	220	5.5/20 ppm	1 ppm	25-29s/12-17s	CO	[33]
NiO	NTs	W	375	8.74/200 ppm	15 ppm	178s/152s	xylene	[170]
TiO_2	NFs	Pd	180	38/2.1 ppm	0.16 ppm	-	NO_2	[171]
SnO_2	NFs	Pt	300	11.9/10 ppm	1 ppm	-	Toluene	[172]
WO_3	NFs	Pd	350	5.5/1 ppm	20 ppb	10.9s/16.1s	Toluene	[158]
WO_3	NFs	Au	250	229.7/100 ppm	1 ppm	5–43 s/ 10–122 s	n-butanol	[173]

Table S4: Sensing performance of electrospun MO_x-MO_x nanofibers categorized based on the analyte gas.

Material	Structure	Diameter (nm)	Operating Temperature (°C)	Response	Detection limit	Response/recovery time	Analyte gas	Reference
NiO/SnO_2	Heterojunctions NFs	180	300	27.5/100 ppm	50 ppb	2.9s/4.7s	Ethanol	[174]
$SiO_2@SnO_2$	core–shell NFs	160 – 320	-	37/200 ppm	50 ppm	13s/16s	Ethanol	[175]
SnO_2–ZnO	Heterostructured NFs	50 – 80	300	78/100 ppm	5 ppm	25s/9s	Ethanol	[176]
ZnO–SnO_2	HNFs	150	260	168.3/200 ppm	20 ppm	4-7s/4-5s	Ethanol	[16]
SnO_2/CeO_2	NTs	200	320	49.1/100 ppm	50 ppm	11s/10s	Ethanol	[177]
ZnO–SnO_2	Core-shell hetrostructure	370	200	392.29/100 ppm	5 ppm	74s/12s	Ethanol	[178]
SnO_2/α-Fe_2O_3	NTs	65	200	27.45/100 ppm	5 ppm	3s/14s	Ethanol	[54]
Sn-SnO_2/C	heterostructure NFs	350 – 400	220	46.15/1000 ppm	10 ppm	-	Ethanol	[179]
SnO_2/α-Fe_2O_3	hierarchically Core-shell HNFs	100 – 200	340	20.370/100 ppm	2 ppm	15s/25s	Ethanol	[180]
SnO_2/ZnO	Composite NFs	60 – 80	360	17.5/3000 ppm	27.7	5s/1s	Ethanol	[181]
ZnO–TiO_2	Hierarchical heterojunctions NFs	100 – 300 nm	320	50.6/500 ppm	20 ppm	50.6s/5–10 s	Ethanol	[62]
NiO-In_2O_3	Composite NFs	152	300	78/100 ppm	20 ppm	-	Ethanol	[182]
Eu_2O_3–In_2O_3	Composite NTs	160	260	44/50 ppm	0.2 ppm	3s/21s	Ethanol	[151]
TiO_2-SnO_2	core–shell heterostructure NFs	120 – 250	280	13.7/100 ppm	10 ppm	2s/60s	Acetone	[183]
SnO_2–ZnO	Heterojunctions NFs	120	300	84/100 ppm	5 ppm	19s/9s	Acetone	[184]
SnO_2/α-Fe_2O_3	NTs	65	200	10.07/100 ppm	5 ppm	4s/12s	Acetone	[54]
SnO_2/α-Fe_2O_3	hierarchically Core-shell HNFs	100 – 200	340	30.363/100 ppm	2 ppm	5s/13s	Acetone	[180]
a-Fe_2O_3/SnO_2	Cage-like composite NFs	160	275	5.3/100 ppm	100 ppm	1.5s/2.5s	Acetone	[185]
ZnO–In_2O_3	Composite NTs	300	280	43.2/60 ppm	0.125 ppm	5s/25s	Acetone	[186]
In_2O_3–Fe_2O_3	Composite NTs	130	240	25/100 ppm	1 ppm	3s/7 s	Acetone	[187]
In_2O_3–WO_3	Heterojunction NFs	170	275	12.9/50 ppm	0.4 ppm	6s/64s	Acetone	[63]
α-Fe_2O_3/SnO_2	Heterostructure NTs	90	300	33.4/100 ppm	1 ppm	4.9–5.9 s/15.8–22.5s	Acetone	[188]
SnO_2/In_2O_3	Hetrojunction NTs	80 – 120	300	118/50 ppm	250 ppb	60s/97s	Formaldehyde	[60]
SnO_2/In_2O_3	Hetero HNFs (nano needles on NTs)	450 – 500	290	13.85/10 ppm	0.5 ppm	20s/40s	Formaldehyde	[61]
SnO_2/In_2O_3	hetero-NFs	100 – 250	375	7.5/10 ppm	0.5 ppm	-	Formaldehyde	[189]
In_2O_3–Fe_2O_3	Composite NTs	130	260	15/100 ppm	1 ppm	4s/7 s	Formaldehyde	[187]
In_2O_3 – SnO_2	Hetrojunction NRs	230 – 470	RT	8.98/100 ppm	0.1 ppm	4.67 s/-	NO_x	[19]
ZnO–SnO_2	Heterostructure (NF–NWstem-branch)	120	350	35/0.1 ppm	0.1 ppm	-	NO_2	[190]
SnO_2–ZnO	Composite NFs	55 – 80	200	105/4 ppm	400 ppb	-	NO_2	[191]
In_2O_3 Beads@TiO_2−In_2O_3	Beads on composite NFs	150 – 250	RT	95/97 ppm	0.3 ppm	4.3s/-	NO_2	[45]
In_2O_3/TiO_2	Mesoporous NFs	200	RT	41.1%/97 ppm	97 ppb	3s/-	NO_x	[20]
Al_2O_3–In_2O_3	Mesoporous composite NFs	200	RT	100/97 ppm	291 ppb	28s/-	NO_x	[18]
SnO_2–ZnO	HNFs	80 – 160	190	15.6/50 ppm	1 ppm	6-11s/12-23s	Toluene	[192]
NiO–SnO_2	Composite NFs	80 – 160	330	11/50 ppm	50 ppm	1.2 s/ 4 s	Toluene	[60, 193]
ZnO–SnO_2	Composite NFs	100 – 200	360	9.8/100 ppm	10 ppm	5s/6s	Toluene	[183, 194]

Material	Structure	Diameter (nm)	Operating Temperature (°C)	Response	Detection limit	Response/recovery time	Analyte gas	Reference
In_2O_3–SnO_2	Composite NFs	40 – 100	80	8.1/1 ppm	50 ppb	1s/6s	Trimethyl amine	[2]
NiO/ZnO	Heterojunction NFs	100	260	892/100 ppm	0.5 ppm	30s/35s	trimethylamine	[195]
In_2O_3–SnO_2	Composite NFs	60 – 100	280	~29/100 ppm	2 ppm	8s/15s	Methanol	[196]
SnO_2-ZnO	Heterostructure HNFs	160 – 380	350	~9.0/10 ppm	1 ppm	20s/40s	Methanol	[197]
CuO/SnO_2	Composite NFs	~300	200	23/1 ppm	0.01 ppm	23s/25s	H_2S	[198]
ZnO–CuO	Composite NFs	150 – 200	150	4489.9/10 ppm	1 ppm	-	H_2S	[199]
CuO/SnO_2	Mixed NFs	110	300	522/10 ppm	10 ppm	1s/305s	H_2S	[42]
SnO_2–CuO	Heterojunctions NFs	130 – 200	235	95/10 ppm	-	37s/80s	CO	[200]
SnO_2 – C	Hierarchical heterostructured NFs (nanosheets on NFs)	150 – 500	200	~16.5/100 ppm	1 ppm	4s/16s	H_2	[70]
ZnO/$CoNiO_2$	Composite HNFs	60 – 80	220	240/100 ppm	-	8s/11s	NH_3	[201]

NRs: Nanorods, NBs: Nanobelts

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