

CONTENTS

	Page
Acknowledgement	d
Abstract in Thai	e
Abstract in English	g
List of Tables	l
List of Figures	m
Statement of Originality in Thai	u
Statement of Originality in English	v
Chapter 1 Motivation and background	1
1.1 Nanotechnology and Nanostructures	1
1.2 Zinc oxide polymorphs	3
1.2.1 Growth kinetics of ZnO nanostructures	6
1.2.2 ZnO tetrapod-like features	8
1.2.3 ZnO nanostructures network	10
1.3 Thermal oxidation	14
1.4 Microwave	16
1.4.1 Microwave Interactions of Material	16

1.4.2 Power of electromagnetic energy of the material	18
1.4.3 Skin depth of materials	19
1.4.4 Conduction losses for conductivity materials	20
1.4.5 Required power for increasing temperature	21
1.5 Metal Oxide for Gas Sensor and UV Sensor Devices	21
1.5.1 Metal oxide semiconductors	21
1.5.2 Metal oxide semiconductors gas sensing fundamental mechanism	22
1.5.3 Sensing mechanism of the metal oxide semiconductors gas sensor	23
1.5.4 Ultraviolet (UV) sensor	26
1.6 Literature review	29
1.7 Research Objectives and Usefulness of the Research	30
1.7.1 Research Objectives	30
1.7.2 Usefulness of the Research	30
Chapter 2 Synthesis and Characterization of ZnO Tetrapods Network	31
2.1 Preparation of the interlinked ZnO tetrapod networks	33
2.1.1 Preparation of ITN-ZnO	33
2.1.2 Characterization and morphology of ZnO	37
2.2 Growth mechanism the ITN-ZnO	43
2.3 Chapter Summary	47
Chapter 3 ZnO Tetrapods Network Applied as UV Sensor	48
3.1 Fabrication of UV sensor	49
3.2 Optical properties of ITN-ZnO	51

3.3 Electrical properties of ITN-ZnO under UV light illumination	53
3.4 UV sensing mechanism	58
3.5 Chapter Summary	60
Chapter 4 ZnO Tetrapods Network Applied as Room Temperature Gas Sensor	61
4.1 Fabrication of gas sensor	62
4.2 Ethanol sensing properties of different ZnO morphologies	63
4.3 Acetone sensing properties of different ZnO morphologies	66
4.4 Gas sensing mechanisms	68
4.5 Chapter Summary	69
Chapter 5 Conclusions and Suggestion	70
5.1 Conclusions	70
5.2 Suggestion	71
References	72
List of Publications, Conferences and Patents	84
Appendix	86
Appendix A Publication required for PhD	86
List of Patents	101
Appendix B Copy Rights and Permissions Letter	103
Curriculum Vitae	113

LIST OF TABLES

	Page
Table 1.1 The elementary physical properties of ZnO	5
Table 2.1 The techniques process requires	32
Table 2.2 Microwave techniques for synthesis of ZnO	32
Table 3.1 The ultraviolet sensor electrical properties of with various ZnO kinds of structure morphology	54
Table 3.2 The previously reports of UV sensor/detector based on ZnO nanostructures was concluded by the table list	58



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LIST OF FIGURES

	Page
Figure 1.1 The sematic diagram of a synthesis of nanotechnologies two classifier as variations of bottom-up technologies and top-down technologies.	2
Figure 1.2 Examples of nanostructures and nanomaterials with their typical ranges of dimension	3
Figure 1.3 (a) The hexagonal ZnO wurtzite structure (b), dimension and direction of the ZnO unit cell structure	4
Figure 1.4 ZnO Wurtzite structure model was presented in (a), and (b) ZnO nanostructures have three types of facets	6
Figure 1.5 One-dimensional ZnO nanosturctures have typical growth morphologies and the corresponding facets	7
Figure 1.6 FE-SEM images of T-ZnO were synthesized by the thermal oxidation with (a) the all of them of magnification of $\times 1000$ and (b) one of them of $\times 20,000$. The inset in (b) image shows the tip of a tetrapod	8
Figure 1.7 (a) Model of ZnO structure unit cell; (b) Model of Zn atom tetrahedral construction related with ZnO unit cell; (c) the grain edges and grain boundaries ZnO tetrapod nucleation image (d) T-ZnO four leg with a wedge-like shape join together and form four grain boundaries.	10

Figure 1.8 SEM image of ZnO nanostructures networks vary morphology and characteristic due to them were growth by different technique method. (A) ZnO nanorods were synthesized through a thermal evaporation process. (B) The ZnO nanowires in the nano-network structures were synthesized by the high temperature of solid–vapor deposition technique. (C) ZnO nano-microstructures networks were grown on the patterned chip by via B-FTS technique. (D) ZnO nanowall networks were synthesized by subsequent growth technique. 11

Figure 1.9 Schematic diagrams of networked ZnO nanowires; a) touching ZnO tetrapod arms, and b) it had the energy band diagram (top) and the models of cross-section connection structural the conduction mechanism of ZnO nanowires (bottom) the potentials barriers at the crystal boundary. The depletion of the electrons by desorbed the oxygen molecules on the material surface of touching ZnO nanowires effect to high the potential barrier to the material surface states. The highness of the potential barrier drops however still significantly large (top) when it was under UV illumination. c) The event of ZnO nanowires network that be the bridge in which ZnO tetrapod arms were interpenetrating of each other and d) its energy band diagram (top) and cross-section structural models of nanowires (bottom) show drops of the potential barrier at the crystal boundary. It was illuminated with the UV light (top) significantly accrete of the channel and as a result connected of the channel (bottom). 12

Figure 1.10 SEM images of ZnO nanostructures synthesized by oxidation temperature method at (a) 300, (b) 500, and (c) 1000°C. 14

Figure 1.11 Different oxidation temperatures affect different formation processes of ZnO nanostructures: (a) Solid–solid

	transformation mechanism for below the melting point of Zn	
	(b) Liquid–solid mechanism for between the melting and boiling points	
	(c) Vapor–solid mechanism for above the boiling point of Zn.	15
Figure 1.12	Interaction of the microwave with materials	16
Figure 1.13	Mechanisms of charges or polarization	18
Figure 1.14	(a) Penetration depth and (b) electrical conductivity of selected materials such as, Mg, Fe, Ni, Cu, Zn, and Carbon	20
Figure 1.15	The schematic diagram for change of the event of p-type and n-type of the MOS sensor resistance	24
Figure 1.16	The schematic diagram of electromagnetic radiation spectrum for ultraviolet (UV) light is ingredient	27
Figure 1.17	(a) IV curves of UV sensor nanowire with and without UV light. (b) Responsivity of the UV sensor nanowire within UV light of 4.5 mWcm^{-2} and was biased voltage of 1 V.	27
Figure 1.18	The corresponding time responses of the UV sensor of the ZnS nanostructures based on UV light sensor by the current measure further down and devoid UV illuminate: a, b) single ZnS nanobelt-based sensors, c, d) various ZnS-nanobelts, and, e and f) micro-scale ZnS nanobelt–based sensors.	28
Figure 2.1	Schematic illustration of the preparation system of TN-ZnO, this system uses a household microwave oven (SHARP model) with power of 700 W and frequency of 2.45 GHz ($\lambda=12 \text{ cm}$). Zinc powder (2 g) on a quartz substrate was placed in a quartz tube and heated for 60 s. The wool-like products obtained in the quartz tube were collected for further investigation.	33
Figure 2.2	The maximum of mass of ITN-ZnO were synthesized from with Zn powder 2.0 g (50 times of Zn powder 0.04g) (a) and time at 90 sec (b).	34
Figure 2.3	Mass of ITN-ZnO was prepared by increasing microwave	

- power as 100, 300, 450, 600, 700 and 800 w. 35
- Figure 2.4 Morphologies of ZnO products obtained from microwave-assisted thermal oxidation: FE-SEM image of TN-ZnO was synthesized under microwave oven at 30-90s. 36
- Figure 2.5 Morphologies of ZnO products obtained from microwave-assisted thermal oxidation: (a) optical image which ZnO products can be distinguished into two regions, (b) FE-SEM image of tetrapod-like ZnO at the bottom region, (c) FE-SEM image of TN-ZnO at upper region, and (d) high magnification FE-SEM image of TN-ZnO showing the inter-link between tetrapods. 38
- Figure 2.6 TEM image of the two ZnO tetrapods network: (a) BF-TEM image of two ZnO tetrapods network (“A” and “B”), (b) high magnification BF-TEM image of the leg marked “I” of the tetrapod “A” connecting with the leg marked “II” of the tetrapod “B”, together with a corresponding selected-area electron diffraction pattern (SADP) from the connected region of these legs. (c) HRTEM image at the boundary between leg “I” and “II”, and (d) schematic plan view of the hexagonal ZnO structure along Zone axes in order to explain small mismatch displacement of about $c/8$ at the boundary. 39
- Figure 2.7 IT-ZnO was observed several regions for the investigation of lattice displacement. The images are shown below. However, it has selected the clear and meaningful image to put in the manuscript as in Fig 2.6c. 40
- Figure 2.8 XRD patterns of TN-ZnO compared with T-ZnO and P-ZnO. The samples were characterized by X-ray powder diffractometer (Siemens D-500) with Cu $K\alpha$ radiation. It can be seen that all samples have a similar XRD pattern and the diffraction peaks can be indexed as the wurtzite structure ZnO with $a=b=0.3253$ nm, $C=0.5213$ nm, which is in good

	agreement with the JCPDS No.79-2205.	42
Figure 2.9	Schematic diagram explained mechanism microwave assisted thermal oxidation method.	43
Figure 3.1	Optical image showing three ZnO samples with area of about 5x5 mm ² on substrate electrode.	49
Figure 3.2	The schematic illustration of the measurement used for UV sensing characteristics. For fabrication of ITN-ZnO sensor that under UV light was screened on alumina substrate with gold inter-digital electrodes. Pt wires were connected to electrodes and put in UV box with UV lamps.	50
Figure 3.3	The optical image of ITN-ZnO nanostructures that (a) the specimens were irradiated by the microwave oven for household of and (b) the products had obtained already after MWTO, (c) ITN-ZnO was shown translucent properties upper region of it, (d) the FE-SEM that is the field emission scanning electron microscopy image of ITN-ZnO, and (e) the connection between legs of ITN-ZnO was shown by the bright field transmission electron microscopy (TEM) image (f) the selected area diffraction pattern (SADP) technique result of ITN-ZnO.	51
Figure 3.4	The photoluminescence spectrum of TN-ZnO correlated with P-ZnO and T-ZnO.	53
Figure 3.5	The Nyquist plots results of the ultraviolet light sensors were include from T-ZnO, P-ZnO, and TN-ZnO samples under (a) the UV irradiation and (b) the dark condition.	53
Figure 3.6	The I-V characteristics measurements of TN-ZnO sensor, monitored within dark and within UV light in either one the air or else nitrogen ambient, plotted the graph (a) in a linear scale and (b) in a semi-logarithmic scale, and (c) reversible switching curves of electrical current for devices conditional different ZnO morphologies. Reprinted with permission	

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(d) The photo-dark of resistance ratio that sensitivity was $(R_{uv} - R_{dark})/R_{dark} \times 100$ of TN-ZnO, P-ZnO and T-ZnO sensors within UV light by a 365 nm wave length of ultraviolet intensity at a power of 1, 2, 3, 4, and 5 W/cm², respectively.

57

Figure 3.7 (a) The schematic illustration for the ultraviolet light sensing mechanism that able to illustrate the current enhance within ultraviolet light. (b) The conduction or transduction of the mechanism in structure of ZnO: in the P-ZnO, T-ZnO, and TN-ZnO had the high potential barrier reducing, respectively.

59

Figure 4.1 The schematic illustration of the sensor and the measurement system used for gas sensing. Pt wires were connected to electrodes and put in the quartz tube chamber with UV lamps. UV light source ($\lambda = 365$ nm; UVA) with intensity of 2.80 mW/cm² was used. I-V characteristics were measured with a dc voltage and current sources which were interfaced and controlled by a computer in air and nitrogen ambient with UV on/off illumination. To characterize the ethanol and acetone sensing properties, the ethanol vapor with concentration of 0-1000 ppm was operated to ITN-ZnO sensor at operating temperature from room temperature to 500oC under UV illumination.

62

Figure 4.2 (a) The plot of two cycles of resistance change under ethanol ambient that at ethanol concentration of 1000 ppm for gas sensor based on different ZnO morphologies at operating temperature of 450°C. (b) The plot of sensor response that ratio of resistance measured in air to in ethanol vapor concentration of 1000 ppm at various operating temperatures.

63

Figure 4.3 (a) The resistance change of TN-ZnO sensor tested under UV light illumination in air and in ethanol ambient that concentration of 1000 ppm as a function of time at room temperature (RT). (b) At RT, sensor response properties and ethanol concentration of 10-1000 ppm. (c) TN-ZnO sensor resistance change in comparison with T-ZnO and P-ZnO ones tested under UV light at RT and ethanol concentration of 1000 ppm. (d) TN-ZnO sensor resistance change under UV light at RT and ethanol concentration of 1000 ppm experienced in air along with an inset presentation the resistance tested in nitrogen ambient. 65

Figure 4.4 (a) Gas sensing responses of the TN-ZnO to 1000 ppm of acetone under UV radiation at room temperature compared with that of T-ZnO and P-ZnO. The typical responses were shown for (b) TN-ZnO and (c) T-ZnO sensor under various concentrations. (d) The corresponding sensitivity of the sensors response in (b) and (c) against acetone concentration. 66

Figure 4.5 Schematic illustrations for ethanol/acetone sensing mechanisms that can be used to illustrate the resistance increase under ethanol/acetone vapor at room temperature. There are four stages for sensing mechanism such as oxygen adsorption, photoelectron generation, oxygen-ethanol/acetone reaction, and free electrons release back to valence band. 68

ข้อความแห่งการริเริ่ม

1. งานวิจัยนี้นำเสนอออกซิเดชันเชิงความร้อนที่ใช้ไมโครเวฟช่วยซึ่งเป็นเทคนิคที่ง่ายและรวดเร็ว และนำเทคนิคไปใช้จนประสบความสำเร็จในการสังเคราะห์โครงสร้างนาโนของซิงก์ออกไซด์
2. งานวิจัยนี้ประสบความสำเร็จในการสังเคราะห์ลักษณะเฉพาะพิเศษของโครงสร้างนาโนซิงก์ออกไซด์ ที่มีรูปโครงสร้างแบบเตตระพอด ซึ่งมาเชื่อมกัน ดังนั้นจึงเรียกว่า โครงข่ายนาโนของเตตระพอดซิงก์ออกไซด์ และไม่เคยถูกค้นพบจากการสังเคราะห์ด้วยเทคนิคอื่นมาก่อน
3. งานวิจัยนี้เสนอตัวอย่างการประยุกต์ใช้ โครงข่ายนาโนของเตตระพอดซิงก์ออกไซด์ ที่แสดงสมบัติ ทางไฟฟ้า, ทางแสง, และการตรวจวัดก๊าซ ที่ซึ่งแตกต่างจาก เตตระพอดเดี่ยว และผงของซิงก์ออกไซด์ ซึ่งนำไปสู่ศักยภาพใหม่ในการประยุกต์ใช้เป็นตัวตรวจวัดยูวี และตัวตรวจวัดก๊าซ ซึ่งมีสมรรถนะดีขึ้น

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STATEMENT OF ORIGINALITY

1. The simple and fast technique of microwave-assisted thermal oxidation is introduced and successfully used to synthesizing ZnO nanostructures.
2. The unique nanostructured ZnO morphology having tetrapod-like features with leg-to-leg connecting, so-called “inter-linked tetrapod network of ZnO” or ITN-ZnO is realized by using this technique and is rarely observed elsewhere with other growth techniques.
3. ITN-ZnO exhibits unexpectedly electrical, optical, and gas sensing properties that differ from tetrapod and powder leading to new potential applications. UV sensor and room temperature gas sensor with improved performance are demonstrated as an example.



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