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The logo of Chiang Mai University is a large circular emblem. It features a central figure of an elephant standing and facing left. Above the elephant's head is a traditional Thai lamp (Lampang) with a flame. The lamp is surrounded by eight rays of light. The entire emblem is enclosed in a circular border containing the university's name in Thai script at the top and 'CHIANG MAI UNIVERSITY 1964' at the bottom. There are also decorative floral motifs on the sides.

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$$E_g = hc / \lambda_g$$

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ABBREVIATIONS AND SYMBOLS

Å	Angstrom
AM	Air Mass
Au	Gold
A_m	The cross-sectional area of absorbed gas
Al_2O_3	Alumina
A^+	Electron acceptor
at. %	atomic %
bfp	Back focal plane
B	The peak width measured at half height measured in radius
BET	Brunauer-Emmett-Teller
C	Amount of carbon
C	A constant, related to the free energy of adsorption
c	Speed of light
cm	Centimeter
cm^3/min	Cubic centimeter per minute
CO	Carbon monoxide
CO ₂	Carbon dioxide
CRT	Cathode-Ray Tube
CVD	Chemical Vapor Deposition
CMU	Chiang Mai University
C_A	The concentration of element A
C_B	The concentration of element B

C_2H_5OH	Ethanol
$^{\circ}C$	Degrees Celsius
d_{hkl}	Interplanar distance between (hkl) planes
d	the lattice planar spacing or thickness
DTA	Differential Thermal Analysis
CB	Conduction Band
D	an electron donor
d_{BET}	BET-particle diameter
e^-	Electron
e^-_{CB}	Electron in the conduction band
eV	Electron Volt
E	binding energy
EDS, EDX	Energy Dispersive X-ray Spectroscopy
EM	Electron Microscope
E_0	Energy of ground state
E_1	Energy of first excited state
E_a	Apparent activation energy
E_b	Binding energy
E_F	Fermi level
E_g	Optical band gap of the semiconductor
E_{CB}	Conduction band energy
E_{VB}	Valence band energy
E_k	Kinetic energy
E_{vac}	Energy of vacuum level
FF	Fill factor
FT	Fourier Transform

FT-IR	Fourier transform spectroscopy
FSP	Flame Spray Pyrolysis
G	Conductance
g/l	grams/liter
h	Hour
h	Plank's constant (6.63×10^{-34} Js), hour
HCP	Hexagonal close-packing
HOMO	Highest occupied molecular orbital
$h\nu$	Photon energy
H_2	Hydrogen
h^+	Hole
h^+_{VB}	Hole in the valence band
I_0	Intensity of the incident beam
I	Intensity of the transmittance
I_A	Background subtracted peak intensities for A
I_B	Background subtracted peak intensities for B
I_{sc}	Short circuit current
ITO	Indium-tin oxide
IUPAC	International Union of Pure and Applied Chemistry
J	Intensity of the reflected radiation
JCPDS	Joint Committee Powder Diffraction Standards
K	Kelvin
K	Absorption coefficient
k	Conductivity value
keV	Kilo electron volt
kV	Kilo-volt

\tilde{k}	Wave vector
\tilde{k}'_{cb}	Wave vector of the lowest energy state in the conduction band
\tilde{k}'_{vb}	Wave vector of the highest energy state in the valence band
LUMO	Lowest unoccupied molecular orbital
LPG	Liquid petroleum gas
L/min	Liter per minute
M	Mol per liter
MIM	Metal-Insulator-Metal
mg	Milligram
min	Minute
mL	Milliliter
m ²	Square meter
mS	Millisiemen
n	Order of diffraction
n_b	Electron density in bulk
n_s	Electron density in the space-charge region
nm	Nanometer (10^{-9} m)
NO ₂	Nitrogen dioxide
N_a	Avogadro's number (6.02×10^{23})
O	Oxygen
O ₂	Oxygen gas
O ₂ ^{-•}	Superoxide radical
O _A	O ₂ adsorbed on surfaces
OH [•]	Hydroxyl radical

p	Pressure at the constant temperature
p_0	Saturation pressure at the measurement temperature
PL	Photoluminescence
R_α	Absolute remittance
rpm	Revolution per minute
r_k	Kelvin radius
R_0	Resistance in air
Rg	Resistance when the gas is present
r_p	Actual pore radius
S	Twice the scattering coefficient of sample or gas-sensing sensitivity
Sc	Semiconductor
SEM	Scanning Electron Microscopy
SSA	Specific Surface Area
SSA_{BET}	BET specific surface area
T	Transmittance
T_{rec}	Recovery time
T_{res}	Response time
TEM	Transmission Electron Microscopy
TGA	Thermal Gravimetric Analysis
t	Thickness (t) of adsorbed N_2 layers
t_{hkl}	Particle size measured from X-rays diffracted from the (hkl) planes
UV-Vis	Ultraviolet-Visible
V	The volume, reduced to standard conditions (STP) of gas adsorbed per unit mass of adsorbent at a given

	pressure
VB	Valence band
V_{OC}	Open circuit voltage
$V_m I_m$	The maximum deliverable power
V_m	The volume of gas adsorbed at STP per unit mass of adsorbent, when the surface is covered by a unimolecule layer of adsorbate
V_{mol}	The molar volume of adsorbate gas at STP(22.4 mol ⁻¹)
WO ₃	Tungsten trioxide
XPS	X-ray photo-electron spectroscopy
XRD	X-ray diffraction
Z	Atomic number
ZnO	Zinc Oxide
λ	Wavelength
μg	Microgram (10 ⁻⁶ g)
$\mu\text{g C}$	Microgram of carbon
μm	Micron (10 ⁻⁶ meter)
μ_s	Electron mobility at the surface
$\mu\text{S/cm}$	MicroSiemens /square centimeter
Φ	Work function
ϵ	Absorptivity
ϵ_0	The permittivity of the vacuum
θ	The Bragg angle for the reflection
ν	Frequency
ν_{as}	Frequency asymmetric
ν_s	Frequency symmetric

σ_s

Surface conductivity

$\Delta\phi_s$

The surface potential barrier height

ΔR

Resistance change

η

Power conversion efficiency



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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