



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكرو فيلم

# بسم الله الرحمن الرحيم



**HANAA ALY**



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# شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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# جامعة عين شمس

## التوثيق الإلكتروني والميكروفيلم

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كلية العلوم – قسم الكيمياء

# **Co-production of Hydrogen and Carbon Nanotubes from Polyethylene Plastic Waste**

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كلية العلوم – قسم الكيمياء

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## List of Abbreviations

EJ	Exa-Joule
ppm	Part per million
PCA	Paris Climate Agreement
US	Unite States
HydESS	Hydrogen-based Energy Storage System
MJ	Mega-Joule
K	Kelvin
GW	Giga Watt
MW	Mega Watt
h	Hour
IEA	International Energy Agency
NASA	National Aeronautics and Space Administration
HHV	High heating value
LHV	Lower heating value
FCEVs	Fuel Cell Electric Vehicles
HRSs	Hydrogen Refilled Stations
DC	Direct Current
AC	Alternative Current
PEC	Photo Electrochemical Cell
POX	Partial Oxidation
CNMs	Carbon Nanomaterials
TOS	Time-on-Stream
TCD	Thermal Catalytic Decomposition
CNTs	Carbon Nanotubes
CNFs	Carbon Nanofibers

GO	Graphene Oxide
rGO	Reduced Graphene Oxide
g-C <sub>3</sub> N <sub>4</sub>	graphite-Carbon Nitride
CVD	Chemical Vapor Deposition
MWNTs	Multi-Walled Carbon Nanotubes
SWNT	Single-Walled Carbon Nanotube
DWNT	Double-Walled Carbon Nanotube
GPa	Giga Pascal
H <sub>2</sub>	Hydrogen
CH <sub>4</sub>	Methane
C <sub>2</sub> H <sub>4</sub>	Ethylene
C <sub>2</sub> H <sub>2</sub>	Acetylene
CO	Carbon monoxide
CO <sub>2</sub>	Carbon Dioxide
PE	Poly ethylene
LDPE	Low density polyethylene
HDPE	High density polyethylene
PP	Polypropylene
PS	Poly styrene
PET	Poly ethylene terephthalate
Kton	Kilo ton
CO <sub>2</sub> eq	Carbon Dioxide equivalent
SAP	Structural Adjustment Program
IMF	International Monetary Fund
NP	Nonylphenol
PAH	Polycyclic aromatic
DDT	Dichlorodiphenyltrichloroethane
BPA	Bisphenols A



PBDE	Polybrominated diphenyl ether
CFC	Chlorofluorocarbon
MSI	metal-support interaction
TPR	Temperature programmed reduction
IUPAC	International Union of Pure and Applied Chemistry
BET	Brunauer–Emmett–Teller
cc	Cubic Centimeter
m	Meter
C <sub>2+</sub>	Hydrocarbon gases with carbons more methane
Vol.%	Volume percent
Wt.%	Weight percent
Cm	Centimeter
nm	Nanometer
g	Gram
FWHM	The full width at half maximum
TGA	Thermo-Gravimetric Analysis
DTG	Differential Thermal Analysis
TEM	Transmission Electron Microscopy
FTIR	Fourier Transform Infrared Spectroscopy
TCD	Thermal Conductivity Detector
XRD	X-ray Diffraction
CNO	Carbon Nano Onion
r-CNT	Ribbon Carbon Nanotube
t-CNF	Turbostratic Carbon Nanofiber
p-CNF	Platelet like Carbon Nanofiber
B-CNT	Bamboo Carbon Nanotube