

Mycology & Disease Survey Research Dep.  
Nanotechnology & Advanced Nano-Materials Laboratory (NANML )



قسم بحوث الفطريات وحصر الأمراض  
معمل النانوتكنولوجي والمواد النانومترية المتقدمة

## REPORT

### Copper Oxide Nanoparticles

#### 1. General Properties:

- Appearance (Color)** : Dark brown to Black
- Appearance (Form)** : Powder
- Molecular weight:** : 79.545 g/mol

#### 2. Characterizations:

- I. **Size:** Copper oxide nanoparticles was produced in (size  $25 \pm 5$  nm average size) and measured using Nanosizer Nano ZS instrument (Malvern Instruments).

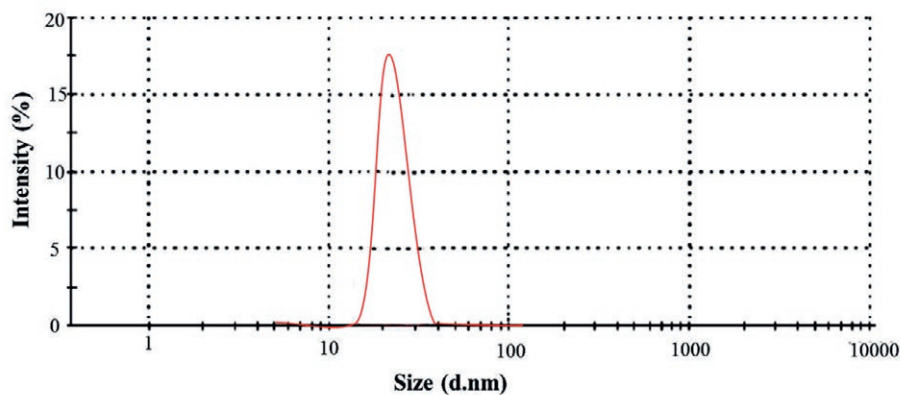
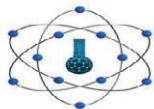


Figure1. Shows the DLS image of CuO nanoparticles.

The dynamic light scattering (DLS) analysis of copper oxide revealed that the prepared copper oxide in nanoscale with average size  $25 \pm 5$  nm.



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## II. X-ray Diffraction pattern (XRD) analysis:

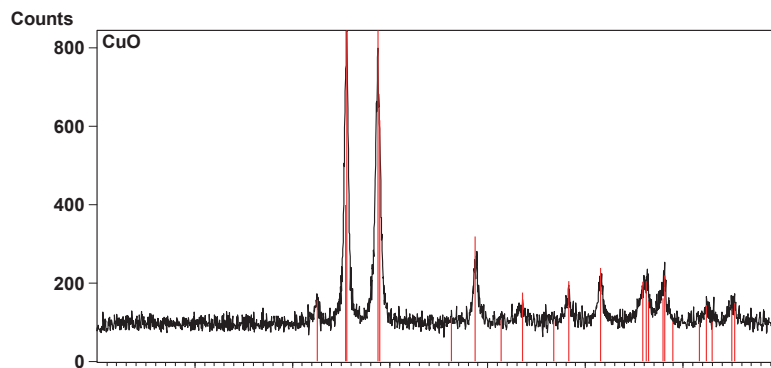
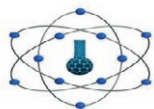


Figure 2. shows the XRD pattern of copper oxide nanoparticles



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## REPORT

### *Titanium oxide Nanoparticles*

#### 1. General Properties:

- Appearance (Color)** : white color
- Appearance (Form)** : Powder
- Molecular weight:** : 79.866g/mol

#### 2. Characterization:

- I. **Size:** Titanium oxide nanoparticles was produced in (size  $45 \pm 5$  nm average size) and measured using Nanosizer Nano ZS instrument (Malvern Instruments).

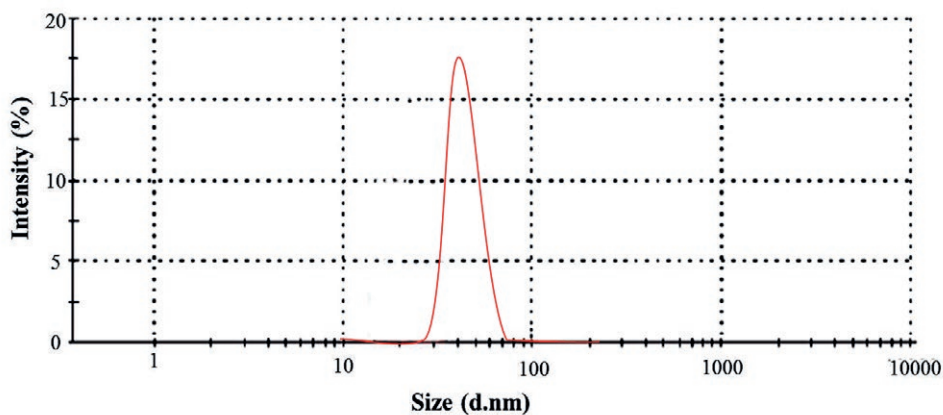
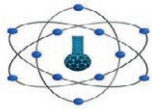


Figure1. Shows the DLS image of Ti<sub>2</sub>O nanoparticles.

The dynamic light scattering (DLS) analysis of titanium oxide revealed that the prepared titanium oxide in nanoscale with average size  $45 \pm 5$  nm.



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## II. X-ray Diffraction pattern (XRD) analysis:

An XRD pattern has been performed using XPERT-PRO Powder Diffractometer system, with 2 theta ( $20^\circ$  -  $80^\circ$ ), with Minimum step size 2Theta: 0.001, and at wavelength ( $K\alpha$ ) =  $1.54614^\circ$ .

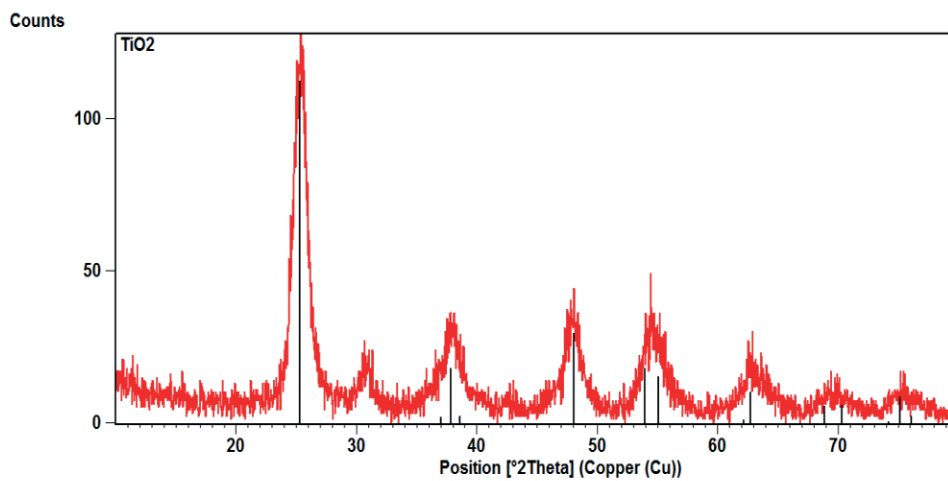
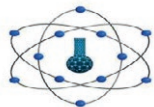


Figure 2. shows the XRD pattern of titanium oxide nanoparticles



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## REPORT

### Silica nanoparticles

#### 1. General Properties:

Appearance (Color) : white

Appearance (Form) : Powder

Molecular weight : 60.08 g/mol

#### 1. Characterizations:

- I. **Size:** Silica oxide nanoparticles was produced in (size  $50 \pm 23$  nm average size) and measured using Nanosizer Nano ZS instrument (Malvern Instruments).

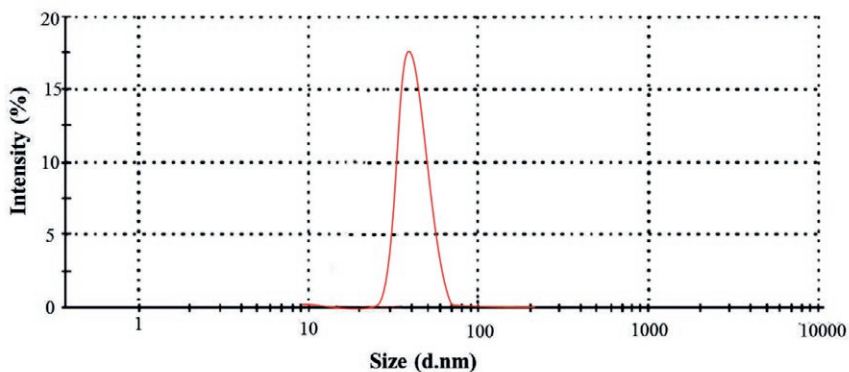
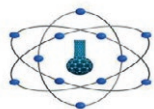


Fig. 1: Dynamic light scattering (DLS) image of silica oxide nanoparticles



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## II. X-ray Diffraction pattern (XRD) analysis:

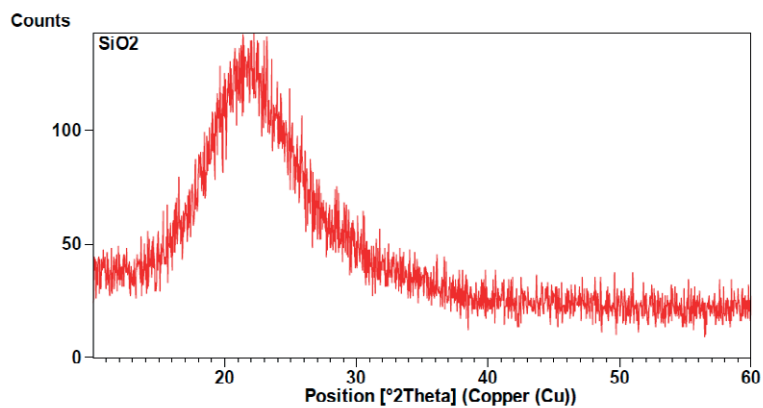


Figure 2. Shows the XRD pattern of the prepared SiO<sub>2</sub> nanoparticles