Technical Data Sheet

FlexiNanoMag-1

Iron oxide(II,III), magnetic nanoparticles (3~5 nm, -COOH, -NH_2 functional)

Properties

Form : Aqueous suspension
Full Name : Iron oxide(II,III), magnetic nanoparticles dual (carboxy & amino) functional
CAS Number: 1317-61-9

Preparation: Hydrothermal reduction
Particle Size : 3~5 nm

Structure : Hexagonal (2D)

Product Description

The dual functional Iron oxide(II,III) magnetic nanoparticles (MNPs) were synthesized and post-synthesis chemically modified in a three-step chemical reaction involving; (i) hydrothermal reduction, (ii) size fractionation using gradient-gravity separation, and (iii) post-synthesis modification of purified & fractionated nanocrystals. The chemical modification was carried out by ligand exchange reaction and chemical activation. These nanocrystals were made water soluble with the available free -COOH and -NH_2 functionalities for customers to use for their desired chem-/bio-conjugations & other application (1).

Application areas:

These MNPs offers water-solubility, dual surface functionality with their free -COOH and -NH_2 groups for customers to use for their desired chem-/bio-conjugations & other application (1). They are useful in magnetic separation, purification, and advanced synthesis. They find application in biomedical research (imaging & diagnostics), chemical catalysis, environmental remediations.

Storage conditions: +4°C in aqueous suspension
Packaging : 2 mg, 5 mg, 10 mg
Quality Control

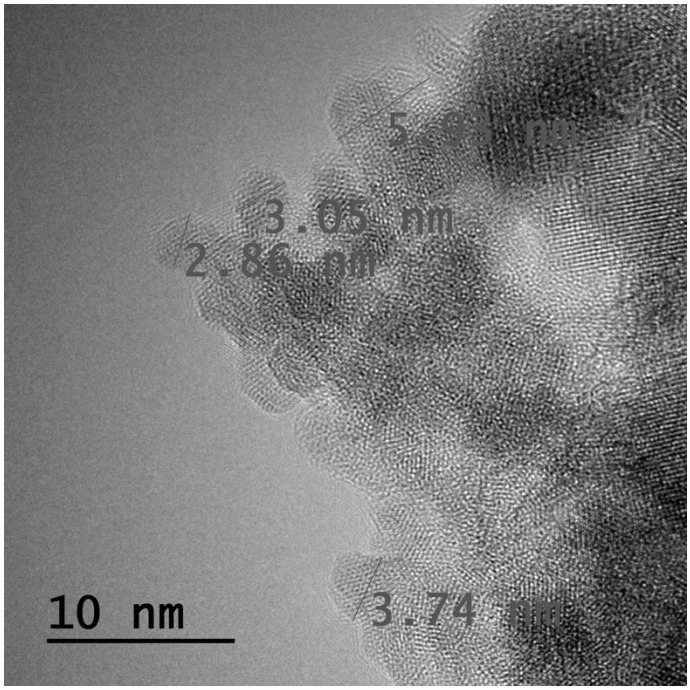
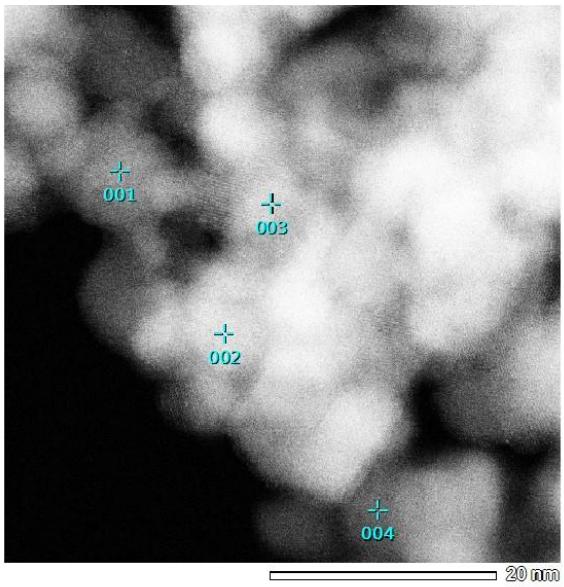
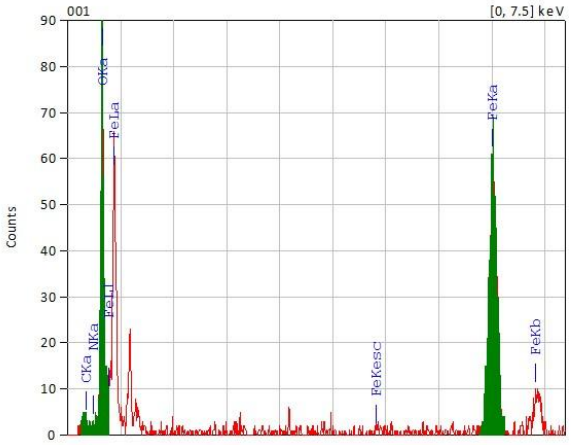
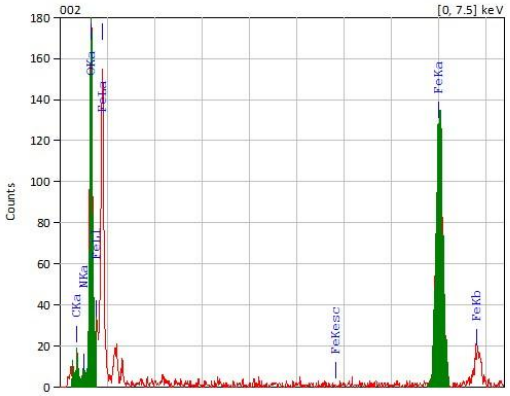


Figure 1. TEM image of magnetic iron oxide nanoparticles



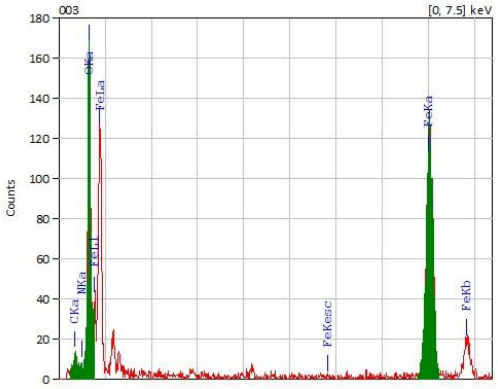


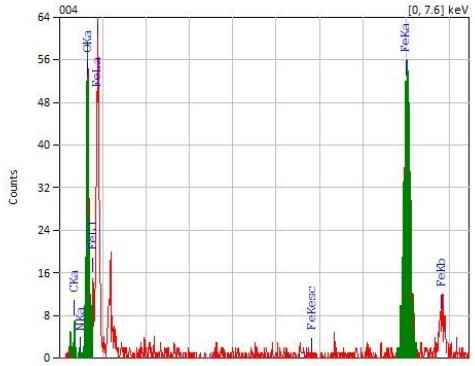
Element	(keV)	Counts	Mass%	Sigma	Atom%
C K					
N K	0.392	10.12	1.28	0.51	2.50
O K	0.525	450.93	40.54	0.00	69.09
Fe K	6.398	748.42	58.18	0.00	28.41
Total			100.00		100.00



Element	(keV)	Counts	Mass%	Sigma	Atom%
C K					
N K	0.392	25.72	1.36	0.23	2.67
O K	0.525	1064.15	39.95	0.00	68.50
Fe K	6.398	1807.53	58.69	0.00	28.83
Total			100.00		100.00

Element	(keV)	Counts	Mass%	Sigma	Atom%
C K					
N K	0.392	18.43	0.94	0.51	1.84
O K	0.525	1109.01	39.94	0.00	68.92
Fe K	6.398	1898.40	59.12	0.00	29.23
Total			100.00		100.00





Element	(keV)	Counts	Mass%	Sigma	Atom%
C K					
N K	0.392	8.06	1.20	0.58	2.51
O K	0.525	331.28	35.04	0.00	64.08
Fe K	6.398	697.01	63.76	0.00	33.41
Total			100.00		100.00

Figure 2. EDS point maps & composition of magnetic iron oxide nanoparticles.

References : (1) Immuno-optomagnetic point-of-care assay and method for detection of analyte using multifunctional optomagnetic quantum dot nanqcrystals (MQDs) JHNK Mohammed, A Qureshi - US Patent 11,598,777, **2023**