Randa Roshdy

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Career Objective:

- My research focuses on the creation of chemical nanocomposites, which use waste to create valuable and highly effective materials for the purifying of diverse water sources.
- Becoming a researcher in environmental chemistry and nanomaterials is my objective.

Education

- Master degree in Chemistry (Inorganic Chemistry) 2022, Department of chemistry, Faculty of science Aswan University, Egypt.
- Diploma in analytical chemistry 2016, Department of chemistry, Faculty of science (Qena), south valley university, Egypt.
- B.Sc. in Chemistry 2015, Department of chemistry, Faculty of science (Qena), south valley university, Egypt.

Master thesis title

Purification of Water Resources from Iron and Manganese Ions by Nano-hydroxyapatite

Research Skills:

We synthesized hydroxyapatite nanomaterial by chemical precipitation from cement plant waste (side dust), which also has a high calcium content, and compared them with chemical compounds derived from different calcium salts. Also, we evaluated how well hydroxyapatite samples were able to remove iron and manganese from different water sources.

Skills and Experience Highlights

- Training of treatment and desalination of drinking water and sanitation at the Central laboratory of the Water company
- Attend a seminar in qena water and sewage company about "main lab equipment"
- Unlimited Success Diploma Certification from Winning Egypt.
- Nanotechnology and its Applications Discovery and self-development
- participation in Cairo Water Week for "3 Minutes Thesis (3MT) Competition" that was held within Cairo Water Week 2019 activities during the period from 20th to 24th October 2019 in Cairo – Egypt
- Team member on a project to transform cement plant dust into highly efficient adsorbents for iron and manganese removal from water sources
- Working at Qena university hospital from 10-2015 till now.
- Training and working at ElSafwa Laboratory for 4 months
- Training course in medical analysis at Red Crescent hospital for 3 weeks
- Summer course and training on medical analysis at Qena university hospital for a month
- Training course on the specialized medical analysis at ElMeghar Laboratory from 15/2/2014 to 25/2/2014

Gradation research title

Recycling Studies for Use in Wastewater Treatment, Especially in The Removal of Zinc from Water Sources.

Publications

1. Ahmed, R., El-Nahas, S. A., & Mohamed, A. (2022). Structural and Morphological Features of Hydroxyapatite Nanoparticles from Different Calcium Resources. Aswan University Journal of Environmental Studies, 3(3), 313-323.(Published)

2. Recycled Bypass Dust to Synthesize Nano-Hydroxyapatite for Remediation of Water Resources. (Under Publication)

Laboratory analysis equipment

Firstly, biochemical analysis:

Blood chemistry instruments

1. Erba chem7.
2. Cobas C311 Analyzer.
3. Pentra 400.
4. Microlab 300
5. BT3500

blood count instruments

6. Cell-DYN Emerald.
7. Cell-DYN Ruby.
8. Sysmex.
9. Celltac.
10. BD FACS canto II Flow Cytometer.

Bleeding and clotting time tools

11. STAGOCOMPACT CT coagulation Analyser.
12. Coagulation /Analyser / Coagulate

Hormones and viruses instruments

13. Abbott Architect i2000 SR.
14. TOSOH

Blood gases and electrolytes

15. Easy Blood Gas Analyser PH, PCO_2 and PO_2.
16. DIESTRO AP103

Secondly, chemical analysis devices

1. Atomic absorption spectroscopy (ASC – 6000) auto sampler, SHIMADZU.
2. UV-Spectra
3. MAGNA-IR 560 SPECTROMETER
4. Hanna Instruments™ Multiparameter Photometer

Computer:

Expert in Microsoft (Word, Excel, and PowerPoint),Origin, Endnote, Photoshop and great skills in Data analysis software such as XRD Plot, FTIR Plot, Surface area Plot SEM or TEM Plot

Languages

Fluent English and Native Arabic.

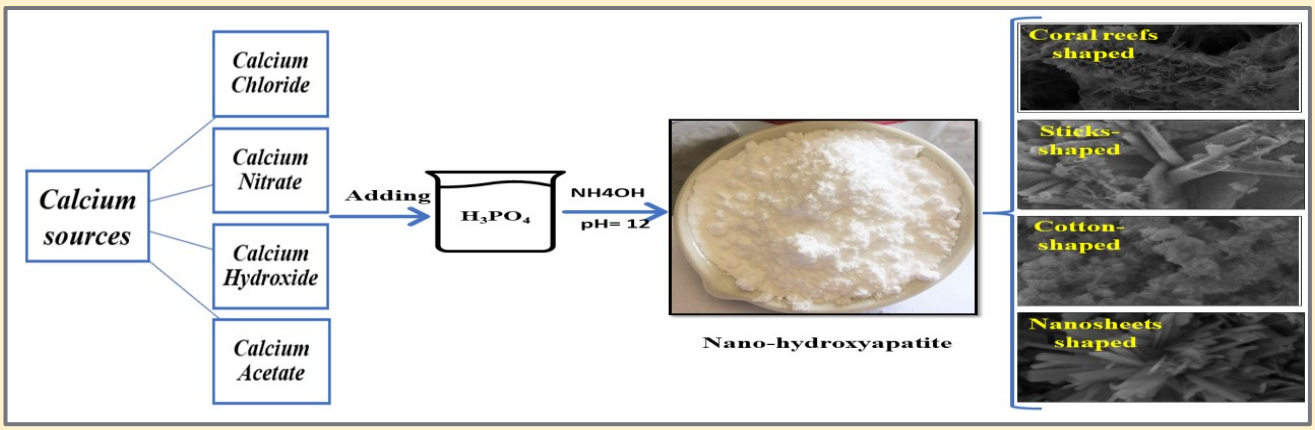
Details in Publication

1- (Structural and Morphological Features of Hydroxyapatite Nanoparticles from Different Calcium Resources) Published

Abstract:

The shape of the growing crystals during creation of nano-hydroxyapatite materials is influenced critically by the source of calcium salt. Hydroxyapatite may be utilized in a wide range of applications due to its various morphological structures. Four samples of nano-hydroxyapatite were synthesized using inexpensive and readily available calcium salt sources. Samples have also been characterized and analyzed via XRD, FTIR, SEM, TG, and S_{BET} methods. The weight losses for the HAp samples investigated varied from 1% to 3%, indicating that they were all thermally stable. During the interaction of various calcium ions with concentrated phosphoric acid, the presence of various anions throughout the preparation process acts as a structure shaping agent. Coral reef-shape, Sticks, nano-sheet and cotton-shape morphological structures resulted according to SEM analyses. All tested materials showed a high surface area following the order HA-Cl (162.73 m^2/g) > HA-OH (136.32 m^2/g) > HA-AC (135.27 m^2/g) > HA-NO_3 (115.98 m^2 / g).The hydroxyapatites studied have crystallite sizes ranging from 14.85 to 25.72 nm, putting them on the Nano scale. Tested hydroxyapatite materials were effectively utilized to remove contaminants such as Fe^{3+} and Mn^{2+} from water with efficiencies of up to 95%.The total cost ranged from 258-386 EGP/100g (13.02-19.47) €/100g, including electricity costs.

Graphical abstract



2- (Recycled Bypass Dust to Synthesize Nano-Hydroxyapatite for Remediation of Water Resources) (Under Publication)

Abstract:

Water resource availability is affected by climate change, which has long-term socioeconomic repercussions. This study intends to transform cement bypass waste onto hydroxyapatite that aids in water resource purification. Four hydroxyapatites' samples (Kiln-HA1- Kiln-HA4) were successfully prepared in nano-scale (14.8 - 25.7 nm). The specific surface areas of all of the samples examined were high: Kiln-HA3 (161.5 m^2/g)>Kiln-HA1 (130.2 m^2/g) >Kiln-HA2 (81.9 m^2/g) >Kiln-HA4 (54.1 m^2/g).Tested nano- hydroxyapatite successfully removed Fe^{3+} and Mn^{2+} from water with efficiencies of up to 95%. The maximum adsorption capacities (qmax) of Kiln-HA samples varied from 147 to 175 mg. g-1 for adsorbed Fe (III), while were wide ranged from 204 to 344 mg.g-1 for adsorbed Mn (II). Hydroxyapatite had a good selectivity for removing cations in binary& tertiary solutions Fe^{3+}, Cu^{2+} and Mn^{2+}. The removal process really demonstrated a complex interplay between several mechanisms, including adsorption and ion exchange. The overall cost of producing 100 grams of hydroxyapatite from cement bypass waste is less than other calcium source which was 184 EGP/100g (9.32 €/100g). Additionally, we attempt to employ a SWOT approach to evaluate the marketing and consumption of nano-hydroxyapatite generated from cement waste.