

Mahmoud E. Awad

Lecturer and Researcher

Applied Mineralogy ● Pharmaceutical Technology

(Energetic - Creative - Innovative - Flexible - Hardworking - Motivated)

+2 010 9794 3656

mawad@azhar.edu.eg

Geology Department, Faculty of Science,
Al-Azhar University, Nasr City, 11884, Cairo, Egypt.

About me

- My research area lies on boundaries of applied clay mineralogy, geochemistry and clay-based pharmaceutical formulations.
- My research has been focused on the formulation and characterization of medicinal and cosmetic clay-based formulations.
- My attention is concentrated on clay-doped metal nanocrystals, polymer-clay nanocomposites and other modified nanoclay derivatives in nanomedicine and nanopharmaceutics.

Education

University of Granada & Al-Azhar University

Doctor of Philosophy (Ph.D.)
International Double Degree:
Sedimentary Geochemistry -
Pharmaceutical Technology

2013 - 2018
Cum Laude

Al-Azhar University

Master of Science (M.Sc.)
Sedimentary Geochemistry

2008 - 2012

Al-Azhar University

Bachelor of Science (B.Sc.)
Geochemistry

2002 - 2005
Very Good with Honor

Experience

2019 - Present ● Lecturer and Researcher

Permanent
Position

Geology Department, Faculty of Science,
Al-Azhar University, Cairo, Egypt.

- Preparing/updating contents and exams of courses: Applied Mineralogy, Crystal Chemistry, Mineral Geochemistry, Geopharmacy and Geomedicine.
- Teaching lectures of the above courses with their lab sessions management.
- Supervising B.Sc. graduation and postgraduate M.Sc. and Ph.D. projects.
- Co-PI: Azhar University Applied Mineralogy (AUAM) research group.

2019 - Present ● Lecturer and Researcher

Secondment
Position

Geology Department, Faculty of Science,
Damietta University, New Damietta, Egypt.

- Preparing/updating contents and exams of courses: Sedimentary Geochemistry, Environmental Geochemistry, and Petroleum Geochemistry,
- Teaching lectures of the above courses with their lab sessions management.
- Supervising B.Sc. graduation and postgraduate M.Sc. and Ph.D. projects.

2015 - 2018 ● Visiting Researcher

- Andalusian Institute of Earth Science (IACT-CSIC), and Faculty of Pharmacy, University of Granada (UGR), Spain: CTS-649 group.
- Faculty of Pharmacy, University of Belgrade, Serbia (Erasmus+ KA1 Mobility).

2007 - 2014 ● Demonstrator & Assistant Lecturer

Geology Department, Faculty of Science,
Al-Azhar University, Cairo, Egypt.

- Teaching lab sections and assist in exam works.

Expertise

Research expertise

- Geochemical and nanomaterials characterizations.
- Geochemical modeling & proxies.
- Mineralogical diagnosis & proxies.
- Molecular simulation modelling.
- Mineral surface and structural modifications.
- Mineral surface adsorptive physicochemical functionality.
- Mineral-fluid interaction.

Academic work skills

- Management and Planning skills for research projects.
- Teamwork communication.
- Writing skills of manuscripts and proposals for research projects.
- Experimental design.
- Critical Thinking.
- Publishing and peer-review skills.
- Presentation, persuasion and motivation skills.

Computer skills

- Microsoft Windows, Office™ and Internet tools.
- Online Mineralogy International Databases.
- Academic Search Engines.
- Scientific Software: X Powder®, Materials Studio®, Sigma-Plot®, Origin Lab®, ImageJ®, MinPet®, Surfer®, ArcGIS®.
- Graphical Design Software: Adobe Illustrator®, Photoshop®, CorelDraw®, Canvas®.
- Python coding (Background).
- Artificial Intelligence, Machine Learning, Deep Learning, and IoT (Background).

Languages

English



Spanish



Arabic



Conferences & Meetings

- Invited talk in the 116th International Clay Conferences ICC, Granada, Spain, 17 – 21 July 2017.
- Invited talk in the 8th International Scientific Conference, Al-Azhar University, Cairo, Egypt, 26 – 28 March 2012.
- Poster presentation in the XXV Meeting of the Spanish Clay Society (SEA), Zamora, Spain, 5 – 7 July 2018.
- Poster presentation in the XXIV Meeting of the Spanish Clay Society (SEA), Madrid, Spain, 5 – 7 September 2016.

Membership

- Valued member of the Clay Minerals Society (CMS).

Projects

- Egyptian governmental funded mission for PhD project implemented at the University of Granada, Spain (2015 - 2018).
- The Andalusian Government projects [RNM1897 and RNM363, and CTS-946].
- The Spanish MINECO projects [CGL2016-80833-R, UNGR15-CE-3531 and FIS2016-77692-C2-2P].
- The Spanish FEDER projects [FIS2016-77692-C2-2-P, PCIN-2017-098].
- Erasmus+ KA1 mobility program 2016/2017.
- The Bedaiti funded graduation project (2021-2022) by the Academy of Scientific Research and Technology (ASRT).

Supervision & Co-supervision

- M.Sc. student, Amr M. Farrag, Chemistry Department, Faculty of Science, Damietta University, 2022: Pyrofabrication of metal-kaolinite nanocomposites and their applications (research assistance).
- M.Sc. student, Eman A. Mohamed, Chemistry Department, Faculty of Science, Helwan University, 2022: Detecting antiviral activity of metal-kaolinite nanocomposites in cell culture against baculovirus as a model of viral infection (Co-Supervision).
- B.Sc. graduation project 2022: A safe and low-cost model design of smart Nano-clay granules loaded with microbes and urea to fertilize lands and increase agricultural production (Full Supervision).

Peer-Review Activity

- Applied Clay Science.
- Clays and Clay Minerals.
- Clay Minerals.
- International Journal of Pharmaceutics.
- Journal of Advanced Research.
- PLOS ONE.
- Iranian Polymer Journal.
- European Journal of Remote Sensing.

Trainings & Technical Skills

- Mineral identification, quantification, microstructure and crystallite size analysis by XRD/XRF diffractometry using XPOWDER®.
- New XRD-based methods for study of clays and clay minerals: using NEWMOD, SYBILLA and ROCKJOCK software.
- Petrographical examination with textural Image Analysis using ImageJ®.
- Mineralogical specifications using spectroscopic FTIR and Raman methods.
- Mineralogical and geochemical modelling by hyperspectral analysis using V-NIR Spectroradiometry.
- Particle size and textural analysis by laser granulometry using MasterSizer technique.
- Micromorphological and microtextural characterization using Electron Microscopy (SEM & HR-TEM/EDX).
- Colorimetric measurements using Konica-Minolta CM-700d Spectrophotometer.
- Nanoparticle size and surface charge characterization by ZetaSizer technique.
- Thermal behaviors of minerals using Differential Scanning Calorimetry (DSC) and thermogravimetric (TGA) analyses.
- Rheological characterization of mineral aqueous dispersions using Haake Roto Visco-1 Rheometer.
- Mineral powder compaction analysis using Gamlen® D-series techniques.
- Design and formulations of polymer/mineral bio-nanocomposites and metal/clay nanocomposites.
- Loading and release dissolution testing using USP Paddle Apparatus with UV-spectrophotometer and HPLC analyses.
- Petrographic characterization using X-Ray Computed Tomography (micro-CT) scanning technique with ImageJ®.
- Mineral designs, formulations and applications in the 3D Printing Technology.

Publications

- ElDeeb, A.B., Brichkin¹, V.N., Bertau, M., **Awad, M.E.**, Savinova, Y.A., 2022. Enhanced alumina extraction from kaolin by thermochemical activation using charcoal. *Clay Minerals*, In Press.
- **Awad, M.E.**, López-Galindo, A., Medarević, D., Milenković, M., Ibrić, S., El-Rahmany, M.M., Viseras, C., 2021. Enhanced antimicrobial activity and physicochemical stability of rapid pyro-fabricated silver-kaolinite nanocomposite. *International Journal of Pharmaceutics*, 120372.
- **Awad, M.E.**, Borrego-Sánchez, A., Escamilla-Roa, E., Hernández-Laguna, A., Sainz-Díaz, C.I., 2020. Modeling of the adsorption of a protein-fragment on kaolinite with potential antiviral activity. *Applied Clay Science*, 199, 105865.
- **Awad, M.E.**, López-Galindo, A., Medarević, D., Đuriš, J., El-Rahmany, M.M., Ibrić, S., Viseras, C., 2020. Flow and tableting behaviors of some Egyptian kaolin powders as potential pharmaceutical excipients. *Minerals* 10(1), 23.
- **Awad, M.E.**, Escamilla-Roa, E., Borrego-Sánchez, A., Viseras, C., Hernández-Laguna, A., Sainz-Díaz, C.I., 2019. Adsorption of 5-aminosalicylic acid on kaolinite surfaces at a molecular level. *Clay Minerals* 54, 49-56.
- Hernández, A.C., **Awad, M.E.**, Meléndez, W., González, G., López-Galindo, A., Sánchez-Espejo, R., García-Villén, F., Viseras, C., 2019. Colloidal and thermal behaviors of some Venezuelan kaolin pastes for therapeutic applications. *Minerals* 9(12), 756.
- **Awad, M.E.**, López-Galindo A., Sánchez-Espejo, R., El-Rahmany, M.M., Viseras, C., 2018. Thermal properties of some Egyptian kaolin pastes for peliotherapeutic applications: Influence of particle geometry on thermal dosage release. *Applied Clay Science* 160, 193–200.
- **Awad, M.E.**, Amer, R., López-Galindo A., El-Rahmany, M.M., García Del Moral L.F., Viseras, C., 2018. Hyperspectral remote sensing for mapping and detection of Egyptian kaolin quality. *Applied Clay Science* 160, 249 – 262.
- **Awad, M.E.**, López-Galindo A., Sánchez-Espejo, R., Sainz-Díaz, C.I., El-Rahmany, M.M., Viseras, C., 2018. Crystallite size as a function of kaolinite structural order-disorder and kaolin chemical variability: sedimentological implication. *Applied Clay Science* 162, 261 – 267.
- Borrego-Sánchez, A., **Awad, M.E.**, Sainz-Díaz, C.I., 2018. Molecular modeling of adsorption of 5-aminosalicylic acid in the halloysite nanotube. *Minerals* 8(2), 61.
- **Awad, M.E.**, López-Galindo, A., Setti, M., El-Rahmany, M.M., Iborra, C.V., 2017. Kaolinite in pharmaceutics and biomedicine. *International Journal of Pharmaceutics* 533, 34–48.
- **Awad, M.E.**, López-Galindo A., El Rahmany, M.M., El-Desoky, H.M., Viseras, C., 2017. Characterization of Egyptian kaolins for health-care uses. *Applied Clay Science* 135, 176–189.

