

CV
Dr Walid Salama, Ph.D.

Business address: Commonwealth Scientific and Industrial Research Organization (CSIRO), Australian Resources Research Center (ARRC), Mineral Resources Flagship (MRF), 26 Dick Perry Avenue, Kensington WA 6151, Perth, Western Australia.

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Work History and duties

- 1. *March 2012 to present: Post-doc fellow*** Commonwealth Scientific and Industrial Research Organization (CSIRO), Australian Resources Research Center (ARRC), Mineral Resources Flagship (MRF).
Duties: I participated in several projects of greenfield and brownfield mineral exploration in the Albany-Fraser and Capricorn orogens as well as the Yilgarn Craton in Western Australia and Mount Isa, Queensland.
- 2. *December 2010: Lecturer*** "Geology Department, faculty of Science, Cairo University, Egypt".
Duties: I taught the following lectures for the undergraduate students: 1) geomorphology; 2) introduction to crystallography, rocks and minerals; 3) Lab work of the ore deposits. I organized the field trip for the B.Sc. students (Bahariya-Farafra districts, Egyptian Western Desert). I supervised 2 M.Sc. and Ph.D. students. I was a member in the committee responsible for supervising the examination and the marking process.
- 3. *March 2006-June 2007 and October 2009-December 2010: Assistant lecturer*** "Geology Department, Cairo University, Egypt".
Duties: I organized and taught the labs for the undergraduate students including Historical geology, igneous petrology, sedimentary petrology and stratigraphy.
- 4. *June 2007-September 2009: PhD candidate and research assistant*** "Institute of Earth Science, Friedrich-Schiller University, Jena, Germany".
Duties: My main duty was to develop the research work related to my Ph.D. I was an associate Ph.D. student of Prof. Dr. Reinhard Gaupp (team leader of the sedimentology group) at the research training group "Graduate School 1257, alteration and element mobility at the microbe-mineral interface". I learned to use a wide variety of modern mineralogical and geochemical techniques such as SEM, XRD, XRF, ICP-MS/OES, laser ablation ICP-MS, EPMA, Raman spectroscopy, FTIR spectroscopy, X-ray Photoelectron Spectroscopy, TOC, DTA-DTG and iron isotopes. I participated in, with oral presentations, many national and international conferences, workshops, colloquiums and meetings.
- 5. *January 2000 March 2006: M.Sc. candidate and Lab Instructor*** "Geology Department, Cairo University, Egypt".
Duties: I organized and taught the labs for the undergraduate courses including: rock-forming minerals, optical and ore mineralogy, metamorphic petrology and economic geology.

Education

- 1. *March 2012 to present: Post-doc fellow*** in the Australian Resources Research Center (ARRC), Mineral Resource Flagship (MRF), CSIRO (Commonwealth Scientific and Industrial Research Organization), Perth- Western Australia.

2. **December 2010: Ph. D. in Geology** (Mineralogy and Geochemistry), Faculty of Science, Cairo University, Egypt and Friedrich-Schiller University, Jena, Germany. The title of thesis "Geological and mineralogical studies on the microbially-mediated ironstone facies, El Bahariya Depression, Western Desert, Egypt". The thesis was examined by Prof. Dr. Rudy Swennen, KU Leuven, Belgium (Sedimentology) and Prof. Dr. Walter Prochaska, Montan University, Leoben, Austria (Economic Geology). The advisors were Prof. Dr. Mourtada El Aref-Cairo University and Prof. Dr. Reinhard Gaupp, Friedrich-Schiller University Jena-Germany.
3. **January 2006: M. Sc. in Geology** (Mineralogy and Geochemistry), Faculty of Science, Cairo University, Egypt. The title of thesis "Geology and genesis of Ghorabi iron ore deposits and the associated barite-and manganese-rich deposits, El Bahariya Depression, Western Desert, Egypt". The thesis was examined by Prof. Dr. Klaus Germann, Technical university of Berlin, Germany.
4. **November 2000: Introductory courses for M.Sc.** (Mineralogy and Geochemistry). The courses include: Igneous petrology, metamorphic petrology, sedimentary petrology, statistics, geochemistry, ore mineralogy and ore deposits, rock-forming minerals, analytical techniques, isotope geology and German language.
5. **May 1999: B.Sc. Geology (Major)**. Overall Grade: Very good. Faculty of Science, Cairo University.

Training

1. **10-12 March 2014: TEM introductory training course** at CMCA, University of Western Australia.
2. **April 2013: Introductory course in statistics:** Australian Resources Research Centre (ARRC)-CSIRO-Australia.
3. **September 2012: Advanced regolith course:** ARRC-CSIRO-Australia.
4. **April 2012: Portable XRF course:** ARRC-CSIRO-Australia.
5. **April 2012: First aid and health, safety and environment course** (HLTFA301C Apply first aid St John Ambulance, Western Australia).
6. **October 2011: Alumni summer school for scientific training** (organized by German Academic Exchange Service, Cairo Academy). The modules include: 1) proposal writing for post-doc; 2) developing a personality of leadership; 3) scientific thinking and argumentation skills for problem solving; 4) international networking; and 5) ethics in science.
7. **September 5-19, 2005: GEOCHEM training course.** "Geochemical prospecting methods and their environmental applications". Prague, Czech Republic. The course was organized by Czech geological survey and society for geology applied to mineral deposits with the support of UNESCO.
This training course focused mainly on the following items: 1) basic principles of environmental geochemistry and analytical methods; 2) Radon risks and radiometric of prospecting with implications for environmental issues; 3) heavy mineral and stream sediments prospecting and environmental aspects; 4) Soil geochemistry; 5) biogeochemical prospecting and environmental implications; 6) principles of lithogeochemistry; 7) hydrogeochemistry and environmental implications; 8) geostatistics and computer modelling of data; and 9) field training.

Publications

Submitted and planned research papers

1. **Salama, W.** and Anand, R. (**submitted to Palaeogeography, Palaeoclimatology, Palaeoecology**). Permo-carboniferous landscape evolution and climatic changes in the Yilgarn Craton, Western Australia. (IF: 2.7)
2. **Salama, W.**, El Kammar, A., Saunders, M., Morsy, R., and Kong, C. (**submitted to Sedimentary geology**). Microbial pathways in the formation of Phosphorite grains: An example from Wassief area, Safaga District, Egypt. (IF: 2.7)
3. **Salama, W.**, Anand, R. and Verrall, M (**submitted to Ore Geology Review**). Mineral exploration in areas of deep transported regolith using indicator heavy minerals and palaeoredox fronts, Agnew District, Yilgarn Craton, Western Australia. *In e-publish*
4. **Salama, W.**, González-Álvarez, I., and Anand, R. (**In prep. For a special issue in Ore Geology Review**). Mineralogical and geochemical characterization of regolith in the NE Albany-Fraser Orogen, Western Australia.
5. **Salama, W.**, González-Álvarez, I., and Anand, R. (**In prep.**). Significance of silcrete for geochemical exploration: insights from the Albany-Fraser Orogen margin, Western Australia.
6. **Salama, W.**, Anand, R., Morey, A. and Williams, L. (**In prep**). Characterization of supergene gold deposits in Silcrete duricrust, Scuddles Mine, Golden Grove, Western Australia.
7. **Salama, W.**, Smith, R. (**In prep**). Characterization of gossan in Gossan Hill Mine, Golden Grove, Western Australia.)

Articles published in national and international peer-reviewed journals

1. **Salama, W. S.**, EL Aref, M. M. AND Gaupp. R. (2015): Spectroscopic characterization of iron ores formed in different geological environments using FTIR, XPS, Mössbauer spectroscopy and Thermoanalyses. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, **136**, 1816-1826 (IF: 2.1).
2. **Salama, W.** (2014): Paleoenvironmental significance of aluminium phosphate-sulfate minerals in the upper cretaceous ooidal ironstones, East Aswan area, southern Egypt. *International Journal of Earth Science*, **103**, 1621–1639 (IF: 2.3).
3. **Salama, W. S.**, EL Aref, M. M. AND Gaupp. R. (2014): Facies analysis and palaeoclimatic significance of ironstones formed during the Eocene greenhouse. *Sedimentology*, **61**, 1594–1624 (IF: 2.7).
4. Ciobotă,V.; **Salama, W.S.**; Jentzsch, V. P., Tarcea, N.; Rösch, P.; El Kammar, A.; Morsy, R. S. and Popp, J. (2014): Raman investigations of Upper Cretaceous phosphorite and black shale from Safaga District, Red Sea, Egypt. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, **118**, 42-47 (IF: 2.1).
5. **Salama, W. S.**, EL Aref, M. M. AND Gaupp. R. (2013): Mineral evolution and processes of ferruginous microbialites accretion -An example from the Middle Eocene stromatolitic and ooidal ironstones of El Bahariya Depression, Western Desert, Egypt. *Geobiology*, **11/1**, 11-28 (IF: 3.7).
6. Ciobotă,V.; **Salama, W.S.**; Tarcea, N.; Rösch, P.; El Aref, M.; Gaupp R. and Popp, J. (2012): Identification of the mineralogy and organic materials of the Middle Eocene ironstones, the Bahariya Depression, Western Desert, Egypt by means of micro-Raman spectroscopy. *J. Raman Spectroscopy*, **43**, 405–410.

7. **Salama, W. S.**, EL Aref, M. M. AND Gaupp. R. (2012): Mineralogical and geochemical investigations of the Middle Eocene ironstones, El Bahariya Depression, Western Desert, Egypt. *Gondwana Research*, **22**, 717-736.
8. EL Aref, M. M.; Mesaed, A. A.; Khalil, M. A. and **Salama, W. S.** (2006 a): Stratigraphic setting, facies analyses and depositional environments of the Eocene ironstones of Gabal Ghorabi mine area, El Bahariya Depression, Western Desert, Egypt. *Egypt. J. Geol.*, **50**, 29-57.
9. EL Aref, M. M.; Mesaed, A. A.; Khalil, M. A. and **Salama, W. S.** (2006 b): Microbialite morpho-structures and biogenic accretion mechanism of the Eocene ironstones of Gabal Ghorabi mine area, El Bahariya depression, Western Desert, Egypt. *Egypt. J. Geol.*, **50**, 59-81.

Internal CSIRO Reports:

1. Gonzalez-Álvarez, I., Stewart, A., Anand, R.R., **Salama, W.**, Laird, J., Ibrahimi, T., Pinchand, T. (2014) Termitaria in Arnhem Land Northern Territory, Australia: Geochemical exploration for Uranium. Internal report for CSIRO, MRF, Australia, 43 p. (EP:
2. Gonzalez-Álvarez, I., Anand, R.R., Hough, R., **Salama, W.**, Laukamp, C., Sweetapple, M., Ley-Cooper, Y., Sonntag, I., Lintern, M., Abdat, T., leGras, M., Walshe, J. **2014**. Greenfield geochemical exploration in a regolith-dominated terrain: the Albany-Fraser Orogen/Yilgarn Craton Margin. Internal summary report for CSIRO, Australia, M411, 213 pp.
3. Gonzalez-Álvarez, I., **Salama, W.**, Anand, R.R., Abdat, T., Ley-Cooper, Y., leGras, M., Hough, R., Walshe, J. **2013**. Regolith Framework in the Albany-Fraser Orogen/Yilgarn Craton Margin. Internal report for CSIRO, Australia, M411, 109 pp.
4. Gonzalez-Alvarez, I., Ley-Cooper, A.Y., **Salama, W.**, Abdat, T., Anand, R.R., **2013**. Regolith architecture in the SE Yilgarn Craton-Albany Fraser Orogen margin: an AEM-based study to assist exploration strategies for The Neale and Zanthus tenements. CSIRO, Australia, M411, 47 pp.
5. González-Álvarez, I., **Salama, W.**, Anand, R.R., Sweetapple, M., Abdat, T., Legrass, M., Hough, R., Walshe, J., **2013**. Trace Element Mobility in a Deep Weathered Cover Profile in the Albany-Fraser Orogen/Yilgarn Craton Margin: The Hercules and Atlantis Gold Prospects. Internal CSIRO technical report, M411, 81 pp.
6. **Salama, W.**, González-Álvarez, I., Anand, R., Abdat, T., (2013). Regolith characterization in the Northeast Albany-Fraser Orogen and Southeast Yilgarn Craton Margin: stratigraphy, mineralogy and geochemistry in the Neale Tenement. Internal CSIRO Technical Report, M411, 56 pp.
7. Forbes, C., Van der Hoek, B., Gray, G., Hill, S., Giles, D., Normington, V., Ravi, R., Dietman, B., Johnson, A., McLennan, S., Reid, N., Rollison, L., **Salama, W.**, Stoate, K., Wolff, K. **(2013)** Geological and Hydrological Atlas of the Gawler Craton, South Australia, First Ed.,: DET CRC Report 2013/326, 265 p.
8. **Salama, W.** and Anand, R. **(2013b)**: The nature and scale of mechanical and hydromorphic dispersion of elements from the Archean mineral system through Permian cover overlying the Agnew mineral belt. DETCRC final report, 39 pp.
9. **Salama, W.** and Anand, R. **(2013a)**: Preliminary report on mineralogy, geochemistry and petrology of Permian sediments overlying the Agnew mineral belt, including heavy mineral analysis. DETCRC interim report, 189, 100 p.

Abstracts presented in International conferences

1. **Salama, W.**, González-Álvarez, I., Anand, R., Abdat, T., (2014): Geochemical characterization of regolith in the NE Albany-Fraser Orogen, Western Australia. Goldschmidt conference, 8-13 June, Sacramento, California, USA, pp. 2165.
2. **Salama, W.**, and Anand, R. (2014): Permo-Carboniferous sediments: Implications for paleolandscape evolution, climatic changes and geochemical exploration in the Yilgarn Craton, Western Australia. Goldschmidt conference, 8-13 June, Sacramento, California, USA, pp. 2164.
3. González-Álvarez, I., **Salama, W.**, Anand, R.R., Sweetapple, M., Abdat, T., Legrass, M., Hough, R., Walshe, J. (2014): Trace element dispersion and REE-HFSE fractionation in a deeply weathered profile: the Albany-Fraser Orogen margin, Western Australia. Goldschmidt conference, 8-13 June, Sacramento, California, USA, pp. 838.
4. **Salama, W.**, González-Álvarez, I., Anand, R., (2014): Significance of silcrete for geochemical exploration: insights from the Albany-Fraser Orogen margin, Western Australia. The Australian Earth Sciences Convention (AESC), Newcastle, NSW, 3-7 July, Australia, pp. 247-248.
5. González-Álvarez, I., Ley-Cooper, A. Y., **Salama, W.**, (2014): A geological perspective on AEM interpretation for mineral exploration in a regolith-dominated terrain: the SE Yilgarn Craton margin/Albany-Fraser Orogen, Western Australia. The Australian Earth Sciences Convention (AESC), Newcastle, NSW, 3-7 July, Australia, pp. 293-294.
6. González-Álvarez, I., **Salama, W.**, Anand, R., Hough, R., Walshe, J. (2014): Landscape evolution and regolith architecture as critical elements for surface geochemical interpretation in greenfields mineral exploration: the Albany-Fraser Orogen case. The Australian Earth Sciences Convention (AESC), Newcastle, NSW, 3-7 July, Australia, pp. 40.
7. González-Álvarez, I., Ley-Cooper, A.Y., **Salama, W.** (2014): Integrating mineralogy, geochemistry and airborne electromagnetics for greenfields mineral exploration in the regolith-dominated Albany-Fraser Orogen, Western Australia terrain: understanding surface geochemistry. International Mineralogical Association (IMA) 2014, Johannesburg, South Africa, pp. 209.
8. Laukamp. C., González-Álvarez, I., **Salama, W.**, (2014): Regolith characterisation by space borne and drill core spectral sensing data. International Mineralogical Association (IMA) 2014, Johannesburg, South Africa, pp. 315.
9. González-Álvarez, I., Ley-Cooper, A. Y., **Salama, W.**, Anand, R., Munday, T. J., (2013): A geological perspective on AEM for mineral exploration in a regolith-dominated terrain: the SE Yilgarn Craton Margin/Albany-Fraser Orogen, Western Australia. 13th SAGA and 6th AEM Conference and Exhibition.
10. **Salama W.** (2012): Mineralogy and diagenesis of the Coniacian-Santonian ooidal ironstones of Aswan area, South Egypt. 34 International Geological Congress (34 IGC, August 5-10, 2012), Brisbane-Australia.
11. **Salama W.**, Weyer, S., Gaupp R. and El Aref M. (2011): Iron isotope composition of the Middle Eocene ooidal-oncoidal ironstones and the associated lateritic paleosols from the Bahariya Depression, Western Desert, Egypt. 21th Goldschmidt conference, August 14-19, Prague, Czech Republic. Mineralogical Magazine. P.1783.

12. **Salama W.**, Ciobota V., El Aref M. and Gaupp R. (2011): Identification of the mineralogy and organic materials of the Cretaceous and Middle Eocene ironstones by means of FTIR and micro-Raman spectroscopy. 7th European Conference on Mineralogy and Spectroscopy (ECMS, September 4 -7, 2011), Potsdam, Germany.
13. **Salama, W.S.**; Gaupp, R. and El Aref, M. M. (2009): Mineral evolution and diagenesis of the Eocene ironstones, El Bahariya Depression, Western Desert, Egypt. 27th IAS meeting of sedimentology, Alghero, Italy, P. 671
14. **Salama, W. S.**, EL Aref, M. M. and Gaupp. R. (2008): Origin of the autochthonous/-para-autochthonous Fe ooids and oncoids of the Lower Eocene ironstones, Bahariya Depression, Western Desert, Egypt. 160. Jahrestagung der Dt. Ges. f. Geowiss. und 98. Jahrestagung der Geol. Vereinigung e.V. in Aachen, Germany.
15. **Salama, W. S.**, EL Aref, M. M. and Gaupp. R. (2008): Facies architectures and depositional environments of the Lower Eocene ironstones, El Bahariya depression, western desert, Egypt. 26th IAS meeting of sedimentology, Bochum, Germany.
16. Mesaed, A. A., Khalil, M. A., **Salama, W. S.** and El Aref, M. M. (2006): Diagenetic History and Mineral Evolution of the Lutetian Ironstones of Gabal Ghorabi Mine Area, El Bahariya Depression, Western Desert, Egypt. 15th annual meeting of the mineralogical society of Egypt.

Industry Engagement

1. **Hope Downs Project (July, 2013-June, 2014)**: Characterizing the calcrete microbial morphostructures at Hope Downs, Western Australia.
2. **DET CRC 3.3 project (March, 2012-September, 2013)**: Exploration for mineral deposits in deep transported cover: A case study from the Permo-carboniferous glacial sediments at Agnew gold mine, Yilgarn Craton, Western Australia. Presenting the results for DETCRC and Goldfields Ltd.,
3. **M411 Project (March, 2012- December, 2013)**:_Characterizing the regolith stratigraphy, mineralogy and geochemistry in the Albany-Fraser Orogen, Western Australia: Implications for mineral exploration. Presenting the results for GSWA and industry sponsors in a final meeting.
4. **Sandfire project (De Grussa mine, Capricorn Orogen, \$250K, ongoing)**: understanding the mechanical weathering processes and the superimposed hydromorphic dispersion of supergene Cu in the paleochannel sedimentary cover.
5. **First Quantum minerals in Botswana (\$350 K, ongoing)**: mineral exploration in areas of thick transported sedimentary cover using indicator heavy minerals and physical and chemical interface sampling.
6. **CST Lady Annie operations, Mount Isa, (Queensland) project (\$350 K, ongoing)**: Assessing the paleolandscape control on the hydromorphic dispersion of Cu, Pb and Zn through the Precambrian sedimentary successions (calcareous stromatolitic siltstones). Presenting the results for CST mining LTd.,
7. **Collaboartion with MMG for a scientific paper** about the characterisation of supergene gold in silcrete duricrust at Scuddles mine, Golden Grove, Western Australia.
8. Collaboartion with Academia (Cairo University, UWA, UNSW for a publication).

Workshops, seminars rewards and training courses

1. **November, 2014:** MinEx seminar, CSIRO. Presenter.
2. **October, 2014:** LA ICP-MS training course, Curtin University, Western Australia.
3. **August, 2014:** CSIRO Performance Cash Reward, 1000AUS\$.
4. **May, 2014:** Iron Oxide Copper Gold (IOCG) deposits, ARRC, Western Australia.
5. **May, 2014:** Organic geochemistry cluster workshop, Margret River, Western Australia.
6. **March 2014:** TEM introductory training course at CMCA, University of Western Australia.
7. **April 2013:** Introductory course in statistics: Australian Resources Research Centre (ARRC) CSIRO-Australia.
8. **September 2012:** Advanced regolith course: ARRC-CSIRO-Australia.
9. **August 2012:** GeoHost Training Workshop Program (TWP): Sustainable Mining in Africa Workshop, organized by 34th International Geological Congress, Brisbane, Australia.
10. **May 2012:** DET-CRC workshop (Drilling for non-drillers)-Caloundra, Queensland, Australia.
11. **April 2012:** Portable XRF course: ARRC- CSIRO-Australia.
12. **April 2012:** First aid and health, safety and environment course (HLTFA301C Apply first aid St\ John Ambulance, Western Australia).
13. **2012 to present:** Post-doc-fellowship in Australian Resources Research Centre (ARRC), CSIRO (Commonwealth Scientific and Industrial Research Organization)-Perth- Western Australia.
14. **2007-2009:** Ph.D. fellowship from the German academic exchange service (DAAD) (Channel system) in Friedrich-Schiller University, Jena, Germany. I was a PhD student at the graduate school 1257 "Alteration and element mobility at the microbe-mineral interface") funded by the Deutsche Forschungsgemeinschaft (DFG) financial support through.
15. **November 2005:** the best paper presented in the 43th annual meeting of the Egyptian geological society (100 US \$).
16. **November 2000:** Prof. Nasri Metri Shukri and Prof. Ahmed Abu khadra awards for the best graduate student in geology, Cairo University, Egypt.
17. **May 1995-May 1999:** Government Scholarship for Distinguished Undergraduate Students, Cairo University, Egypt.

Foreign language Proficiency

Arabic: Mother tongue.

English: Fluent (speaking, writing and listening) with a local Toefl certificate from Cairo University, Egypt.

German: Fluent (writing) and good (speaking and listening). Two months intensive course in Goethe Institute, Cairo, Egypt (Lower German language levels A1 and A2). Four months intensive course in Goethe Institute, Dresden, Germany. Middle German language level B1 and B2).

Memberships in professional associations

1. Member of the international association of sedimentologists (IAS).
2. Member of the Geochemical society (GS)
3. Former student Member of German geological society (DGV).
4. Member in the geological society of Egypt (GSE).
5. Member in the mineralogical society of Egypt (MSE).

Hobbies: Reading, swimming and travel to new areas.

Computer skills: basic computer skills in Microsoft office, professional experience in CorelDraw graphic program and loGas geochemistry software for plotting.

Professional referees

Dr. Ravi Anand (past supervisor in CSIRO)

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Dr. Ignacio Gonzalez-Alvarez (current supervisor in CSIRO)

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Prof. Dr. Reinhard Gaupp (past Ph.D. supervisor)

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