

Mahmoud Bali

Higher Institute of Water Sciences and Techniques, University of Gabès, Tunisia
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EDUCATION AND QUALIFICATIONS

- 2018: **Habilitation (HDR) in Environmental Geology**, Faculty of Sciences of Tunis, University of El Manar, Tunis, Tunisia
Dissertation: "Improvement of the purification performances of infiltration-percolation process and study of magnetic water treatment"
- 2012: **Doctorate Degree in Geological Sciences**, Faculty of Sciences of Tunis, University of El Manar, Tunis, Tunisia
Dissertation: "Experimental study and modeling of the treatment of domestic wastewater by infiltration-percolation process in arid area"
- 2002: **Degree of in-Depth Studies (DEA) in Environmental Geology**, Faculty of Sciences of Tunis, University of El Manar, Tunis, Tunisia
Dissertation: "Sedimentary dynamics and evolution of the Kneiss coast (Gulf of Gabès)"
- 1999: **Master's Degree in Natural Sciences**, Faculty of Sciences of Tunis, University of El Manar, Tunis, Tunisia

MAJOR RESEARCH EXPERIENCE

Postdoctoral studies, Higher Institute of Water Sciences and Techniques, University of Gabès, Tunisia
2012-2018

- Magnetic hard water treatment
- Water memory
- Treatment of wastewater using sand filter fortified with activated carbon
- Urban wastewater treatment by ventilated sand filters
- Wastewater treatment by advanced oxidation
- *Resulted in 7 publications (all first author)*

Doctoral studies, Faculty of Sciences of Tunis, University of El Manar, Tunis, Tunisia
2007-2012

- Treatment of wastewater by infiltration-percolation process
- Physical-chemical performances of the treatment process
- Microbiological performances of the process
- Modeling of the infiltration-percolation process
- *Resulted in 6 publications (all first author)*

PUBLICATIONS

- **BALI Mahmoud**, GUEDDARI Moncef, BOUKCHINA Rachid (2010) Treatment of secondary wastewater effluents by infiltration percolation. *Desalination (ELSEVIER)*, 258, 1-4. DOI: 10.1016/j.desal.2010.03.041.
- **BALI Mahmoud**, GUEDDARI Moncef (2011) Les chenaux de marée autour des îles de Kneiss, Tunisie : Sédimentologie et évolution. *Hydrological Sciences Journal*, 56(3), 498-506. DOI: 10.1080/02626667.2011.563240.

- **BALI Mahmoud**, GUEDDARI Moncef, BOUKCHINA Rachid (2011) Removal of contaminants and pathogens from secondary effluents using intermittent sand filters. *Water Science and Technology (IWA Publishing)*. 64(10), 2038-2043. DOI: 10.2166/wst2011.448.
- **BALI Mahmoud**, GUEDDARI Moncef (2011) Simulation of oxidation processes and biomass growth in intermittent sand filter. *Journal of Water Reuse and Desalination (IWA Publishing)*. 01(2), 122-130. DOI:10.2166/wrd.2011.031.
- **BALI Mahmoud**, GUEDDARI Moncef (2012) Simulation of water flow and solute transport in intermittent sand filter. *Journal of Water Supply: Research and Technology – AQUA (IWA Publishing)*. 61(1), 50-57. DOI: 10.2166/aqua.2012.104.
- **BALI Mahmoud**, GUEDDARI Moncef (2015) The impact of fractionation of hydraulic load on oxidation performances of sand filters. *Journal of Water Reuse and Desalination (IWA Publishing)*. 6(2), 325-332. DOI: 10.2166/wrd.2015.066.
- **BALI Mahmoud**, MABROUK Yosra, ABDELLI Nadia (2016) Effects of magnetic treatment on scaling power of hard waters. *J. Separation and Purification Technology*, 171, 88–92. DOI:10.1016/j.seppur.2016.07.027.
- **BALI Mahmoud**, JRIDI Hana, FARHAT Soumaya, LOUHICHI Boulbaba, BOUKCHINA Rachid (2017) Treatment of secondary effluents by infiltration-percolation process using sand fortified with activated charcoal. *Int. J. Environ. Sci. Technol.* 14, 1209-1216. DOI: 10.1007/s13762-016-1222-x.
- **BALI Mahmoud**, GUEDDARI Moncef (2018). The effect of magnetic treatment on the physico-chemical and microbiological characteristics of hard waters. *Journal of Separation Science and Technology*, 53 (9), 1405-1411. DOI: 10.1080/01496395.2018.1444640.
- **BALI Mahmoud**, TLILI Hiba (2018). Removal of heavy metals from wastewater using infiltration-percolation process and adsorption on activated carbon. *Int. J. Environ. Sci. Technol.*, 9(3). DOI 10.1007/s13762-018-1663-5.
- FARHAT Soumaya, **BALI Mahmoud**, KAMEL Fethi (2018). Membrane autopsy to provide solutions to operational problems of Jerba brackish water desalination plant. *Desalination*, 445, 225-235.
- **BALI Mahmoud** (2019). Influence de l'aération du massif filtrant sur les performances épuratoires du procédé d'infiltration-percolation. *Revue des Sciences de l'Eau*, 31(4), 365-375.
- **BALI Mahmoud**, GUEDDARI Moncef (2019). Removal of phosphorus from secondary effluents using infiltration-percolation process. *Applied Water Science Journal*, 9(3), DOI: 10.1007/s13201-019-0945-5.
- FARHAT Soumaya, **BALI Mahmoud**, KAMEL Fethi (2019). Geochemical and statistical studies of Mio-Pliocene aquifer's mineralization in Jerba Island, South-eastern Tunisia. *Physics and Chemistry of the Earth*. DOI: 10.1016/j.pce.2019.03.006.
- Gaied Faïçal, Louhichi Boulbaba, **BALI Mahmoud**, JEDAY Mohamed Razak (2019). Tertiary treatment of waste water by Electro-coagulation, Electro-Fenton and advanced Electro-oxidation processes: comparative and economic study. *Songklanakarin Journal of Science and Technology* 41(5), 1084-1092.
- **BALI Mahmoud**, FARHAT Soumaya (2020). Removal of Contaminants and Pathogens from Secondary Wastewater Effluents using Hollow Fiber Microfiltration Membranes. *IJESNR*, 23(3), 78-83, DOI: 10.19080/IJESNR.2020.23.556112.
- BOUZNIF Sourour, **BALI Mahmoud** (2021). Coupling of the coagulation/flocculation and the anodic oxidation processes for the treatment of textile wastewater. *AQUA*, 70(4), 587-599, DOI: 10.2166/aqua.2021.166.
- TLILI Hiba, **BALI Mahmoud**, BOUKCHINA Rachid (2021). Assessment of the performance of intermittent planted filters in treating urban wastewater under arid climate. *Water Science and Technology*, 84(7), 1704-1714, DOI: 10.2166/wst.2021.362.
- DALAOUS Salma, **BALI Mahmoud** (2023). Assessment of the impact of magnetically treated water on the growth and productivity of greenhouse off-soil crops. *Int. J. Agric. Res. Rev.*, 11(4), 30-37, DOI: 10.54978/ijarr.2023.
- CHEBIL Sabrine, **BALI Mahmoud** (2023). Treatment of urban wastewater by coupling planted filters with anodic oxidation process. *Separation Science and Technology*, 58(11), 1-11. DOI: 10.1080/01496395.2023.2240493.

PATENTS

- **International Patent N° 25585** (TN20170000211): Process for the treatment of urban wastewater by infiltration-percolation on sand and activated carbon.
- **International Patent N° 25586** (TN20170000212): Process for the treatment of urban wastewater by infiltration-percolation on an aerated medium.
- **Patent N° 26967** (TN2021/0101): Hybrid water demineralization process combining ion exchange

and magnetic treatment.

- **Patent N° 26968** (TN2021/0102): A tertiary treatment process for urban wastewater, combining infiltration-percolation and anodic oxidation on platinum.
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Books

- **Mahmoud BALI (2020)**. Traitement tertiaire des eaux usées domestiques par infiltration-percolation sur sable : Evaluation des performances épuratoires d'un bassin pilote dans des conditions arides du sud tunisien. EUE, 132p. ISBN : 978-620-2-54208-1.
- **Mahmoud BALI (2020)**. Modélisation de l'épuration des eaux par infiltration-percolation : Simulation des transferts de l'eau et des solutés dans un milieu poreux non saturé. PAF, 132p. ISBN : 978-3-8416-3006-3.
- **Mahmoud BALI (2021)**. Dynamique sédimentaire et évolution du littoral de Kneiss, Golfe de Gabès, Tunisie. PAF, 112p. ISBN : 3841632599.
- **Mahmoud BALI, Rachid BOUKCHINA (2021)**. Design of a reed filter treatment plant. Our Knowledge Publishing. ISBN : 6203803936. 52p.

SELECTED PRESENTATIONS

- **BALI Mahmoud**, GUEDDARI Moncef et BOUKCHINA Rachid. Modélisation du traitement des eaux usées par le procédé d'infiltration percolation. « *Doctoriales CIK 2009 ; Pluridisciplinarité et Recherche : le Golfe de Gabès en exemple* », December 4-5, 2009, Djerba, Tunisia.
- **BALI Mahmoud** et GUEDDARI Moncef. Les chenaux de marée dans le site de Kneiss, (Golfe de Gabès): Sédimentologie & hydrodynamique. « *Doctoriales CIK 2009 ; Pluridisciplinarité et Recherche : le Golfe de Gabès en exemple* », December 4-5, 2009, Djerba, Tunisia.
- **BALI Mahmoud**, Gueddari Moncef et Jedoui Youne. L'oxydation et la décontamination des effluents secondaires par le procédé d'infiltration-percolation. International Congress « *ICEC 2013* », Djerba, Tunisia.
- **BALI Mahmoud**, Moncef GUEDDARI et Younes JEDOUÏ. Traitement des eaux usées urbaines par Infiltration-Percolation sur sable. Colloque International "E3D 2014" Eau, Déchets & Développement Durable 2014, June 16-20, 2014, Ecole des mines d'Alès, Alès, France.
- **BALI Mahmoud**. Impact de l'irrigation par des eaux usées traitées sur les propriétés physico-chimiques des sols: Cas du périmètre irrigué de Dissa (Gabès, Sud tunisien). *The 1st Atlas Georesources International Congress (AGIC 2017)*, March 20 – 22, 2017 at Hammamet, Tunisia.
- **BALI Mahmoud**. Etude de la défluoration d'un effluent liquide industriel par différents procédés physico-chimiques. *The 1st Atlas Georesources International Congress (AGIC 2017)*, March 20 – 22, 2017 at Hammamet, Tunisia.
- **BALI Mahmoud**. Treatment of secondary wastewater effluent for industrial reuse. *Sixth International Water Forum Conference 2018*, March 19 – 21, 2018 at Hammamet, Tunisia.
- TLILI Hiba & **BALI Mahmoud**. Elimination of heavy metals from wastewater using intermittent sand filter and activated charcoal. *Sixth International Water Forum Conference 2018*, March 19 – 21, 2018 at Hammamet, Tunisia.
- FALLEH Imen & **BALI Mahmoud**. Removal of contaminants from wastewater effluents using infiltration-percolation process. *Sixth International Water Forum Conference 2018*, March 19 – 21, 2018 at Hammamet, Tunisia.
- **BALI Mahmoud**. Treatment of wastewater from moorish baths by infiltration-percolation process for agricultural reuse in arid regions. *EGU General Assembly 2018*, Vienna, Austria, April 8-13, 2018.
- **BALI Mahmoud**, GUEDDARI Moncef et BOUKCHINA Rachid. Epuration des eaux usées urbaines par infiltration percolation. *Communication orale* au Deuxième Forum de l'Eau « *Des ressources naturelles aux ressources non conventionnelles* », April 14-15, 2010 at Gabès, Tunisia.
- **BALI Mahmoud**, GUEDDARI Moncef et BOUKCHINA Rachid. Modélisation de l'épuration par infiltration percolation. Deuxième Forum de l'Eau « *Des ressources naturelles aux ressources non conventionnelles* », April 14-15, 2010 at Gabès, Tunisia.
- **BALI Mahmoud**, GUEDDARI Moncef et BOUKCHINA Rachid. L'oxydation et la décontamination en infiltration percolation. Deuxième Forum de l'Eau « *Des ressources naturelles aux ressources non conventionnelles* », April 14-15, 2010 at Gabès, Tunisia

- **BALI Mahmoud**, GUEDDARI Moncef. Etude expérimentale du traitement des eaux usées domestiques par le procédé d'infiltration-percolation en région aride. Troisième Forum de l'Eau « *Vers une gestion participative des ressources en eaux* », March 26 – 28, 2012 at Djerba, Tunisia.
- **BALI Mahmoud**, GUEDDARI Moncef. Modélisation de l'épuration des eaux usées domestiques par le procédé d'infiltration-percolation. Troisième Forum de l'Eau « *Vers une gestion participative des ressources en eaux* », March 26 – 28, 2012 at Djerba, Tunisia.
- **BALI Mahmoud**, GUEDDARI Moncef. La désinfection en infiltration-percolation. Troisième Forum de l'Eau « *Vers une gestion participative des ressources en eaux* », March 26 – 28, 2012 at Djerba, Tunisia.
- **BALI Mahmoud**. Optimisation du prétraitement de l'eau de mer par Coagulation-Floculation afin d'améliorer l'efficacité de dessalement par Osmose-Inverse. Quatrième Forum de l'Eau « *Les ressources en eau : Effets des changements climatiques et perspectives d'adaptation* », March 24-26, 2014 at Sousse, Tunisia.
- **BALI Mahmoud**, Ben Abdelkerim Karima, Barkana Ines, Lagouil Taher. Traitement des effluents secondaires par le procédé de microfiltration tangentielle en vue d'une réutilisation industrielle. Cinquième Forum de l'Eau « *Vers une gestion participative des ressources en eau* », March 21-23, 2016 at Mahdia, Tunisia.
- **BALI Mahmoud**, Phosphorus removal from urban wastewater effluent by infiltration-percolation process. *The second International Symposium WREIANA*, March 25 - 27, 2019, Sousse, Tunisia.

Conferences:

- **BALI Mahmoud**, L'assainissement vert: Une solution pour les eaux usées domestiques dans les zones Rurales. *Foire de la Recherche et de l'Innovation*, 9-10 Mars 2023, Tunis, Tunisie.
- **BALI Mahmoud**, Green sanitation: a solution for domestic wastewater in rural areas. *The Renewed Water Challenge "Innovative ideas for the valorization of Non-Conventional Water Resources (NCWR) in Mediterranean Region"*, MEDWAYCAP& NAWAMED, 6 February 2023, Tunis, Tunisia.
- **BALI Mahmoud**, Domestic wastewater treatment by planted filters: An effective solution in rural areas. *The First International Congress on Food and Environmental Security*, May 15-17, 2023 BBA, Algeria.

TEACHING

Associate Professor, Higher Institute of Water Sciences and Techniques, University of Gabès, Tunisia

Graduate Teaching Program (2012 - 2019)

Course 1: Water and wastewater treatment

Course 2: Physical-chemical treatment processes

Course 3: Biological treatment processes

Course 4: Wastewater reuse

Course 5: Groundwater pollution

Course 6: Water and soil pollution

Course 7: Environmental management

MENTORIND

Professional Master (16)

Research Master (12)

Doctorate (1) 5 (ongoing).

LEADERSHIP EXPERIENCE

- **Head of the Department of Water Resources**, Higher Institute of Water Sciences and Techniques, University of Gabès, Tunisia (2017-2020).
- **Director of the Common Service Unit** of the Higher Institute of Water Sciences and Techniques, University of Gabès, Tunisia.
- **Responsible of Living-Lab** at the University of Gabès, Tunisia.
- **Convener and Chairmen** of the Hydrological Sciences session (HS8) at the *EGU General*

Assembly, Vienna 2019.

- **Chairmen** of Water, Environment and climate change session at the *WREIANA Conference, Sousse 2019.*
- **Member of the organizing committee** of the international congress WREIANA 2019: "Water Resources and Environmental Impact Assessment in North Africa".
- **Member of the scientific committee** of the First International Congress on Food and Environmental Security 2023, BBA, Algeria.
- **Member of the scientific committee** du Colloque Maghrébin sur l'eau et l'environnement dans les zones arides et semi-arides (CMEEZASA'2021).
- **Member of the scientific committee** of the Atlas Georesources International Congress (AGIC) Geoscience Innovations For Resource Management Socio- Economic Challenges In An Environmentally Constrained World, March 18-20, 2023, Hammamet, Tunisia.
- **Member of the Editorial Board** of several *Journals*.
- **Member** of the IME (Institut Méditerranéen de l'Eau).
- **Member of scientific committee** of the *6th International Conference on Sustainable Agriculture and Environment*, Konya 2019, Turkey.
- **Member of scientific committee** of the Maghrebean Colloque on Water and Environment in arid and semi-arid regions (CMEEZASA'2020).
- **Designer of a wastewater treatment plant:** Design of an ecological urban wastewater plant based on vertical flow filter beds planted with reeds. This plant has earned the **ISESCO Prize 2018** for Environmental Management in the Islamic World.