

# CURRICULUM VITAE

Dr. Eng. Hamza ELFIL

**Professor**

at

***Water Researches and Technologies Center (CeRTE)  
Borj-Cedria Techno-park - Tunisia***

***Major: Chemical & Process Engineering***

***Specialty: Water Desalination and scaling***

**Curriculum Vitae:**

- Formation, Professional experiences and Competence fields P1
- Academic Activities P2
- Research Activities P5
- Para-scientific Activities P6
- Socio-Economic Activities P7

**List of publications:** P9

July 2016

## Hamza ELFIL

Born on the 3<sup>rd</sup> of July 1962 in Soliman - Tunisia; Married, 3 children;

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 : [https://www.researchgate.net/profile/Hamza\\_Elfil2](https://www.researchgate.net/profile/Hamza_Elfil2)

 : Hamza ELFIL حمزة الفيل

 : f-amza



## FORMATION

**2005: Academic Research Habilitation in Chemical & Process Engineering;** ENIG-Gabes, TN  
Subject: *Study of mechanisms, prevision and prevention of scaling with calcium carbonates and sulfates.* (DOI: 10.13140/RG.2.1.3851.9920)

**2003: Diploma in English language** obtained at Language Bourguiba School - Tunis.

**1999: PhD in Process Engineering;** INSA - Toulouse – France  
Mention: high honorable with *writing felicitations of jury.*  
Subject: *Contribution to the study of south Tunisian geothermal water: Study of scaling mechanisms and prevention.* (DOI: 10.13140/RG.2.1.2211.9282)

**1990: Master in Mineral Chemistry;** Sciences Faculty of Tunis – Tunisia.  
Subject: *physical-chemical Characterization of some clay used in ceramic industry.*

**1987: Engineering Diploma in Chemical Engineering;** ENIG - Gabes - Tunisia  
Micro thesis: *Conception and Optimization of Reverse Osmosis Water Desalination unit*

**1981: Baccalaureate Math & Sciences;** Mixed School of Soliman - Tunisia.

## PROFESSIONAL EXPERIENCES

Jan. 2016-: Professor at Water Researches & Technologies Center (CERTE), Borj Cedria - TN;

Nov. 2013- June 2015: General Manager of National Handicrafts Office - TN;

April 2012- Sept 2013: General Manager of Tunisian Agency of Professional Training - TN;

2007-2012: Senior Lecture at CERTE, Borj-Cedria Techno-Park- TN;

2000-2007: Associate Professor at the National Institute of Scientific and Technique Research- TN;

1988-2000: Senior Engineer of Chemical Engineering at NISTR - TN.

## COMPETENCE FIELDS

- Water Desalination
- Calco-carbonic system : Scaling phenomena/Sea water acidification
- Science, Technology and Innovation Policy;
- Management of work teams during crisis periods;
- Professional Training System;
- Electoral System (Principles, Rules & Training);

## ACADEMIC ACTIVITIES

### ❖ Educational activities

✓ **Salinity in transformation Project-** German-Arab Transformation Partnership (2016-2017): Development of a 12 ECTS teaching module on desalination and renewable energies, Salinity in transformation Project Sponsored by German Academic Exchange Service (DAAD).

Four Partner:

- Technische Universität Berlin (TUB), Germany
- German Jordanian University (GJU), Jordan
- Princess Sumaya University for Technology (PSUT), Jordan
- CERTE, Tunisia (Boussalmi L.; Elfil H.)

### ✓ Research Master Establishment

I had actively participated in the establishment of a Research Master Degree entitled "Water Treatment Engineering" at the Higher Institute of Science and Environmental Technologies, Borj-Cedria - TN. This Master Degree, made in coordination with the LabTEN laboratory, started in the academic year 2012-2013.

### ✓ Teaching

- Course of "RO Water Desalination"; Professional Master: alternative water sources - Ing. Nat. School of Tunis (ENIT) El Manar University- TN; 2010/2011 & 2011/2012.
- Course of "Water Chemistry"; Professional Master: alternative water sources - Eng. Nat. School of Tunis (ENIT) ; El Manar University - TN; 2010/2011 & 2011/20
- Course of "membrane separation Processes" for 5<sup>rd</sup> year students in Industrial Chem. at INSAT-Carthage University - TN; 2007-2008.
- Integrated course of "Thermodynamic of open systems" for 2<sup>nd</sup> year students in Industrial Chem. at INSAT - Carthage University - TN; 2007-2008.
- Practice Work course "Water Desalination" at High. Inst. Env. Sci. & Tech.; Borj-Cedria, Carthage University - TN; 2005-2007.
- Teaching of controlled work on "Water Desalination" at High. Inst. Env. Sci. & Tech - Borj-Cedria, Carthage University - TN; 2006/2007.
- Course of "water chemistry" at High Inst. of Water Sci. & Tech. Gabes University - TN; 2006/2007.
- Conference courses, Post graduate students; Chem. Eng. Dep<sup>t</sup>. – Fac. Eng. Sci., Blida University- Algeria, June 2004:
  - Water pretreatment in membrane desalination process.
  - Scaling problematical and Ca-carbonic System.
- Course of "Waste and Environment" for 3<sup>rd</sup> year students in Ind. Chem. at INSAT- Carthage University; 2001/2002.
- Practice Work of fluid mechanic at Sup. Inst. Tech. Studies (ISET Rades - TN); 2000/2001.

### ✓ Preparing a course on Science, Technology and Innovation Policy containing:

- Understanding STI Policy in the Context of Development Economics
- Science & Technology Planning
- Technology Transfer and commercialization - Process and Guideline
- Transfer of Public Research Technology to Industry: a case study
- Establishment of Technology Strategy Utilizing Technology RoadMap

## ❖ Conferences

- 1- “Calco-carbonic system and Reverse Osmosis Water Desalination”, Olympiad Chemistry, IPEI El Manar University -Tunisia; March 2010.
- 2- “Water desalination par membrane processes: Reverse Osmosis” 1<sup>st</sup> promotion day of means, Skills and Research Results; Borj-Cedria Ecopark; Nabeul, 02 June 2009.
- 3- “Scaling phenomena in CaCO<sub>3</sub>-CO<sub>2</sub>-H<sub>2</sub>O system: Evaluation of water scaling power”. Presented at Semlalia Sciences Faculty – Marrakech University - Marocco, 14<sup>th</sup> Dec. 2007.
- 4- “Scaling phenomena in Ca-carbonic system: Evaluation of water scaling power”. Course on reverse osmosis brackish and sea water desalination: The Engineering good practices. MEDRC /SONEDE; Tunis, Dec. 2006.
- 5- “Scaling phenomena; Evaluation of water scaling power”. Course on reverse osmosis water desalination: Bases, Conception and Application. MEDRC - University of Bejaia ; Algeria 8 - 21 March 2006.
- 6- “Scaling phenomena, Calco-carbonic system; Application on RO water desalination unit”. 2<sup>nd</sup> course on RO water desalination; co-organized by MEDRC, INRST, SONEDE ;Tunis 14 -17 March 2005
- 7- “Water Problematic in the Arabic word and Reverse Osmosis Water Desalination”. University of Blida - Algeria, 11 June 2004.
- 8- “Scaling phenomena with geothermal water. AIDENIS 1<sup>st</sup> Scientific congress: Water treatment; 15 May 1999, ENIS - Sfax University - TN.

## ❖ Supervision

### ✓ *PhD*

- “Study of co-precipitation of gypsum and calcium carbonate”; PhD defended on 04 May 2015 at INSAT- Carthage University –Tunis, by *M<sup>me</sup> Yosra ZARGA*.
- “Study of co-precipitation of calcium sulfate and carbonate; 1<sup>st</sup> inscription 2015/2016; Faculty Science-Tunis, El Manar University; PhD Student: *Miss Emna Millitti*.

### ✓ *Masters*

- 1- Diagnosis of a reverse osmosis water desalination plant with capacity of 24m<sup>3</sup>/d; Professional Master defended on July 2013 at ENIT- El Manar University- Tunis, by *Mr. Aamri N*.
- 2- Evaluation of boron removal in by reverse osmosis water desalination unit of offshore drilling; Prof. Master defended, on July 2013 at ENIT- El Manar University- Tunis, by *Mr. Elouati G*.
- 3- Study of chemical fooling prevention of RO membranes by ferric precipitate; Master defended on July 2013 at INSAT-Tunis, by *Mr. ABIDI H*.
- 4- Study of gypsum precipitation Kinetics; Master defended on Dec. 2012, at Fac. Sci. Tunis - El Manar University, by *Miss MATTOUSSI H*.
- 5- Sand filter medium consolidation diagnosis in reverse osmosis desalination plant; *Master* defended, on 7 July 2010 at ENIG – Gabes university, by *Misses ELBAZ A*.
- 6- Pollution assessment by setting CO<sub>2</sub> concentration in seawater; Prof. Master defended on Dec. 2009 at Fac. Sci. Bizerte- Carthage University; by *Mr. CHOURABI S*.
- 7- Diagnostic and performances study of small-scale reverse osmosis desalination unit; *Master* defended, on 12 February 2009 at INSAT - El Manar University- Tunis, by *Miss HELALI Z*.
- 8- Calcium carbonate scaling prevision in high ionic strength solutions; *Master* defended on 2 Feb. 2008 at INSAT - Carthage University - Tunis, by *Misses DRIDI-NAIMI I*.
- 9- Decarbonation of geothermal water by seeding coupled with air bubbling; Master defended on

22 Jan. 2008 at INSAT -Carthage University- Tunis, by *Mr. AHMED H.*

**10-** Chemical fooling of RO and NF membranes: Influence on the running performances; *Master* Co-supervised with *Mr. FERJANI E.*, Prof at ISSTE, Borj-Cédria and defended, on 2 January 2008 at INSAT - Carthage University- Tunis, by *Misses MAKHLOUF K.*

**11-** Contribution to the study of calcium carbonates and sulfates co-precipitation; *Master* defended, on 18 May 2007 at INSAT- Carthage University- Tunis, by *Mr. BEN BOUBAKER H.*

**12-** Contribution to the study of susceptible precipitated salts in RO water desalination; *Master* (DEA) defended, on 21 April 2004 at Fac. Sci. Tunis, by *Mr. NAOUEL R.*

**13-** Contribution to the study of calcium sulfate scaling phenomenon; *Master* Co-supervised with *Pr. GADRIA.* and defended, on 16 December 2002 at ENIG -Gabes University, by *Mr. ALIM I F.*

**14-** Study of control process against scaling in industrial cooling circuits; *Master* Co-supervised with *Pr. BENAMORI M.* and defended, on 19 Nov. 1997 at ENIS-Sfax University, by *Mr. TLILI M.*

### **Micro Thesis**

**1-** "Assessment and treatment of boron in reverse osmosis water desalination", Bachelor's Degree in Physic-Chem. Of the environment, ISSTE Borj-Cedria; June 2012.

**2-** "Diagnosis of RO brackish water desalination plant". Eng. Analytical Chemistry, Fac. Sci. Tunis; July 2011.

**3-** "Brackish water desalination by reverse osmosis"; Bachelor's Degree in Physic-Chem. Of the environment, ISSTE Borj-Cedria; June 2010.

**4-** "Diagnosis of the Open-Gain RO desalination unit". Bachelor's Degree in Chem. Ind., ISSTE; June 2010.

**5-** "Diagnostic of well water RO desalination plant"; Eng. Industrial Chem., INSAT; Jan. 2009.

**6-** "Technical evaluation of small-scale tap water RO desalination unit ". ISET Zagouan, Juin 2006.

**7-** "Technical-economic evaluation of tap water RO desalination unit ". Dep<sup>t</sup>. Ind. Chem., INSAT, April 2006.

**8-** "Study of mixed precipitation of carbonates and sulfate calcium". Eng. Ind. Chem., INSAT, Jan. 2006.

**9-** "Study of sand filters caking in Gabes desalination plant"; Eng. Ind. Chem., INSAT, Jan. 2006 (Co-supervision).

**10-** "Chemical inhibition of calcium carbonate with two phosphonics acids by using Bubbling method ", Bachelor's Degree in Ind. Chem., INSAT; June 2003 (Co-supervision).

**11-** "Geothermal water decarbonatation by seeding coupled with air bubbling", Eng. Ind. Chem., INSAT, June 2003.

**12-** "Scaling water decarbonatation by seeding"; Eng. Ind. Chem., INSAT, January 2002.

**13-** "Study of Chemical inhibition of gypsum formation"; Eng. Chem. & Process Engineering; ENIG, June 2001.

**14-** "Study of inhibitors efficiencies used in scaling water treatment"; Bachelor's Degree in Ind. Chem., INSAT, June 2000.

**15-** "Diagnosis of desalination plant of Kerkennah Islands"; Eng. Chim. Engineering, ENIG - June 1995 (Co-supervision).

### **❖ PhD and Master work Evaluations**

#### **✓ PhD Work Reporter**

1/ "Energy generation and recovery by Pressure Retarded Osmosis (PRO): Modeling and experiments"; PhD defended on 2 Dec. 2015, at Universidad de Valladolid-School of industrial Engineering - Spain, by Eng. *Khaled Touati.*

2/ "Contribution to the study of industrial effluent treatment highly charged with fluorine"; defended on 19 Dec. 2015, at ENIG Gabès, by Eng. *Abdessalem Ezzeddine*.

3/ "Study of wastewater treatment by membrane process: effect of biotic and abiotic parameters on membrane fouling; PhD defended on 19 Dec. 2014 at INSA by Eng. *Amine Charfi*.

4/ Evaluation of 3year PhD progress report "Influence of evaporation on water scaling power" Graduate School of Engineering Sciences and Trades - Paris, Mars 2008.

✓ **President of Master Jury**

- " Study of coagulation flocculation effect on membrane fouling" ; Master defended on Feb. 2012 at ISSBAT-Tunis

- "Study of pollution discharge of treated water from the Choutrana station in the lagoon of Ghar-Elmelh"; Master defended on 3 Dec. 2009 at Faculty of Science of Bizerte.

✓ **Master Examiner**

- "Monitoring water quality by the Piper diagram and Scholler "; Master defended on 3 Dec. 2009 at Fac. Sci. Bizerte.

## **RESEARCH ACTIVITIES**

### **Head of desalination team in Natural Water Treatment Laboratory (LabTEN; 2010-)**

#### **Research Program (2015-2018) funded by Ministry of Higher Education & Sci. Research**

Under the renewal of the Laboratory of Natural Water treatment (LabTEN), a program on water desalination was approved. This program contains three projects:

1/ Diagnosis and water Treatment of desalination RO Units

2/ Integration of Nano-filtration processes for the desalination of Agricultural water wells

3/ Energy Recovery and production by "Pressure Retarded Osmotic" in sea water desalination plants.

- Program Manager: Hamza ELFIL

- Head of the Laboratory LabTEN: Pr. Med Ben Amor.

#### **Research Program (2010-2014) funded by Ministry of Higher Education & Sci. Research**

In the context of the creation of the Laboratory of Natural Water Treatment (LabTEN), a program on water desalination was accepted.

The main objective of this research program is to develop a research structure able to respond within the time (short-term), the needs of manufacturers in the field of water desalination by reverse osmosis.

#### **European Project - FP6 (2008-2010):**

*Optimal Engineering Design for Dependable Water and Power Generation in Remote Areas Using Renewable Energies and Intelligent Automation "OPEN GAIN"*. The project is interested to Reverse Osmosis Water Desalination by the use of different energy renewable sources.

- Project Manager: Pr. Amanallah Guizani - CRTEN

- Desalination responsible: Hamza ELFIL.

### **Tunisian-Morocco Cooperation (2006-2008)**

« Study of interaction phenomena Scaling - corrosion ». CRTEn Tunisia - Fac. Sci. Semlalia, Marrakech, Morocco.

Marocco Project Chief: Pr. Ahmed Derja

Tunisian Project Chief: Hamza ELFIL

### **Project on Geothermal water; Partners: INRST – SERST (1999/2003)**

- «Study of scaling prevention in the conducts upstream Gabes Water Desalination Unit»;

Project Chief: Pr. *BEN AMOR M<sup>ed</sup>*.

- «Membrane distillation of geothermal water»; Project Chief: Pr. *MAALEJ M<sup>ed</sup>*.

### **Franco - Tunisian - Cooperation (1996-1998)**

Study of control process against scaling with Tunisian south geothermal water ». INRST\_Tunisia- ESPCI Paris - INSA Toulouse\_France.

### **Project on scaling phenomena; Partners: INRST / SERST - TN; 1995/1997.**

- « Study of Salt crystallization in hot water conducts used for irrigation in south of Tunisian »;

Project Chief: Pr. *BEN AMOR M<sup>ed</sup>*.

### **Project on water Desalination; Partners: SONEDE / INRST / SERST - TN - 1995/1997.**

- «Optimal management study of Reverse Osmosis Water Desalination units in the objective of defining a strategy for projected units»; Project Chief: Mr. *LOUIZI A.* (SONEDE).

### **Industrial Contract**

- «Conception and realization of decarbonation decanter of Elhamma-Gabes geothermal water» INRST; Pr. Henri ROQUES (INSA Toulouse); SONEDE -TN ; 1998 - 1999.

- « Environmental impact of ALKIMIA manufacture rejects » ALKIMIA, Industrial Zone of Ghannouch - Gabes; INRST - ENIS - ALKIMIA; TN- 1995.

## **PARA-SCIENTIFIC ACTIVITIES**

### **Establishment of Laboratory of Natural Water Treatment (LabTEN)**

I participated in 2009 in the formulation of the Laboratory project in the field of Desalination Water treatment. The Lab got the visa (Lab code: LR10CERTE02) and a new local in 2010 at the Center of Water Research and Technologies (CeRTE); Borj-Cedria Technopark

Head of Laboratory: Pr. Ben Amor M<sup>ed</sup>.

### **Organization of a National Seminar on Water Desalination**

I was a member of the organizing committee of the seminar "Water desalination in Tunisia: State of Places, Perspectives and Challenges" organized by the LabTEN/CeRTE, under the aegis of the Minister of Higher Education and Scientific Research, Borj-Cedria Technopark; May 11<sup>th</sup> 2011.

### **Co-organization of Course on Water Desalination**

Co-organizer of the 2<sup>nd</sup> course on Reverse Osmosis Water Desalination; MEDRC-INRST-SONEDE; Tunis, 14 -17 March 2005.

### **Advanced Training Courses;**

- Sci. Tech. & Innov. Policy; KOICA/STEPI, Republic of Korea, 14 Oct - 4 Nov. 2015;
- Training of Trainers Cycle, Canadian Centre for Human Development; Tunis, 4-10 Mai 2015;
- Training of Trainers on the “Constitutional National Council” Election guides; Tunis, 1-7 Oct. 2011;
- Intensive course on brackish and seawater Desalination by Membrane Processes (MEDRC), 18-21 June 2006; Kingdom of Bahrain.
- International conference on desalination costing, (MEDRC); Lemesos-Cyprus, 6-8 Dec. 2004.

### **SOCIO-ECONOMIC ACTIVITIES**

- President of local Association “Intelligence Management” وظف ذكائك (2014-);
- Chairman of the Governing Board of the Tunisian National Handicrafts Office (ONAT), Nov. 2013- April 2013.
- Vice President of the orientation committee of Technical Center for Innovation, Renewal and Framing of Carpet and Weaving; Dec. 2013- Avril 2015.
- Chairman of establishment council of the Tunisian Agency for Professional Training (ATFP) Avril 2012 - Aout 2013.
- Member of the governing board of the Tunisian Agency for Employment and Independent Work (ANETI) 2012 - 2013.
- Member of governing board of the National Center of Continuing Education and Professional Promotion (CNFCPP) Sept. 2012 August 2013.
- Labor Union Responsible (Tunisian General Labour Union – UGTT) of Technopark Research Centers (2003-2011);
- Vice President and Committee member of ENIG Diploma Association (1991/93 & 93/1995).

### **Research & Development System**

- Member of Scientific Council of INRST for 2 periods (1990-1994 & 2000-2004);
- Science, Technology and Innovation Policy; KOICA/STEPI, Republic of Korea, 14 Oct - 4 Nov. 2015;
- **Conferences:**
  - Why Korea succeeded, where Tunisia failed: In the field of Science, Technology and Innovation, Presented at National Library (15-03-2016) and at Eng. Nat. School Sousse - TN (06-04-2016)
  - The institutional and regulatory framework for Scientific Research; Seminar on Scientific Research in Tunisia. Realities and Challenges; FGESRS – UGTT ; April 7<sup>th</sup> 2010, Science City - Tunis ;
- **Press articles:**
  - 1- The evolution of scientific research system in Tunisia: The strength of fundamental / Diploma concept and the weakness of development one (in Arabic). June 13<sup>th</sup> 2016; Center for Strategic



and Diplomatic Studies – Tunis; [www.csds-center.com](http://www.csds-center.com)

- 2- \_Why Korea succeeded, where Tunisia failed: In the field of Science, Technology and Innovation (2000 words), Published in 4 Electronic journals and 2 Newspapers  
<http://www.lesemeurs.com/Article.aspx?ID=877#.Vub9N30rLct>;  
[http://www.attoumissia.com.tn/details\\_article.php?t=42&a=167129&temp=1&lang.](http://www.attoumissia.com.tn/details_article.php?t=42&a=167129&temp=1&lang.)
- 3- Institutional and regulatory framework for scientific research; *L'Universitaire*, June 2010.3
- 4- Reply to Dr. Tahar Chaïbi M<sup>ed</sup> article about scientific research; *ELMaoukef*, 18 June 2010
- 5- Researchers exclusion in the scientific research orientations; *Attariq Al-Jadid*, 27 March 2010.
- 6- Proposals about naming the committee members of the recruit and promotion for professor and lecturer grades; *Attariq Al-Jadid*, 19 July 2009.
- 7- What remains of scientific and technological research system in Borj-Cedria Technopark; *Echaab*, May 2009,
- 8- Viewpoint on the new organization of research structures, *L'Universitaire*, N° 17-June 2009.

### **Electoral Activities**

- Member of the Election Regional Independent Authority Nabeul 2 (Tunisia CNC Elections 2011) in charge of Training; June-Nov 2011.
- Lectures for NGOs on the electoral system and the election procedures of the National Constitutional Council; June - Oct. 2011.
- Training of Trainers on Election guide for CNC Elections 2011; 1-7 Oct. 2011, Tunis.
- Training Coordinator of over than 3000 "Presidents and officers" for the CNC Election Offices, Nabeul Districts 1 & 2; 8-18 Oct. 2011.
- Responsible of manual count voting results, Nabeul District 2; 23-25 Oct. 2015, Grombalia-Nabeul
- **Press Paper:**
  - Response to an article about the fraud reveal n on CNC election official results; *Algerian Electronic gazette new media*, 7 March 2012 (<http://www.numidianews.com/ar/article~11504.html>).

### **Various Press papers:**

- 1- Why the government does not keep the dirt area of Soliman municipality, *ELMaghreb*, 21<sup>th</sup> May 2016.
- 2- Why collapsing the responsible authorities in crisis periods, 1<sup>st</sup> Oct. 2013.
- 3- Who runs the General administrations of Higher Education and Scientific Research; *Edhamir*, 1<sup>st</sup> March 2012.
- 4- University, Salafists and Niqab; Electronic magazine *ELMachad Ettounsi*, Dec. 14<sup>th</sup> 2011.
- 5- Negotiations between Higher education General Fedration and Supervising authority: Questions and open accounts; *ELMaoukef*, 1<sup>st</sup> May 2011.

## LIST OF PUBLICATIONS

### ✓ SCIENTIFIC PUBLICATIONS

Article Citations : 233 ([https://www.researchgate.net/profile/Hamza\\_Elfil2/stats/citations](https://www.researchgate.net/profile/Hamza_Elfil2/stats/citations))

- 1- K. Touati, F. Tadeo, H. Elfil, Theoretical analysis of Pressure Retarded Osmosis (PRO) integration into multistage Seawater Reverse Osmosis (SWRO); submitted to *Applied Energy*
- 2- Ben Hamouda S., Akhta F.H., Elfil H., Diagnosis of small capacity reverse osmosis unit for desalinated tap water, *Desalination and Water Treatment*; **52** (2014) 6976–6984; DOI: [10.1080/19443994.2013.822334](https://doi.org/10.1080/19443994.2013.822334)
- 3- Zarga Y., Ben Boubaker H. Elfil H., Calcium sulfate and carbonate simple and mixed precipitation", *Journal of new sciences*, **8** (2014) 7-16.
- 4- Hchaichi H., Siwar S., Elfil H., Hannachi A., Scaling predictions in seawater reverse osmosis desalination, *Membrane Water Treatment*, **5-3** (2014) 221-233; DOI: [10.12989/mwt.2014.5.3.221](https://doi.org/10.12989/mwt.2014.5.3.221).
- 5- Zarga Y., Ben Boubaker H. Ghaffour N. Elfil H. Study of calcium carbonate and sulfate co-precipitation, *Chemical Engineering Science* **96** (2013) 33-41; DOI:[10.1016/j.ces.2013.03.028](https://doi.org/10.1016/j.ces.2013.03.028).
- 6- Hchaichi, H., Elfil, H., Guichardon, P. and Hannachi, A., "Scaling tendency assessment in reverse osmosis modules", *Desalination and Water Treatment*, **51**(2013) 892-898; DOI: [10.1080/19443994.2012.715410](https://doi.org/10.1080/19443994.2012.715410).
- 7- Palacín L., Tadeo F., Elfil H., De Prada C., Salazar J., New dynamic library of reverse osmosis plants with fault simulation, *Desalination and Water Treatment*, **25** (2011) 127-132; DOI: [10.5004/dwt.2011.1434](https://doi.org/10.5004/dwt.2011.1434).
- 8- Elfil H., Hamed A. Hannachi A., Technical evaluation of small-scale RO desalination for domestic water, *Desalination*, **203** (2007) 319-326; DOI: [10.1016/j.desal.2006.03.530](https://doi.org/10.1016/j.desal.2006.03.530).
- 9- Elfil H., Hannachi A. Reconsidering water scaling tendency assessment. *AIChE Journal*, **52**/10 (2006) 3583-3591 ; DOI: [10.1002/aic.10965](https://doi.org/10.1002/aic.10965)
- 10- Elfil H., Roques H, Prediction of the metastable zone in “CaCO<sub>3</sub>-CO<sub>2</sub>-H<sub>2</sub>O” system, *AIChE Journal*, **50**/8 (2004) 1908-1916; DOI: [10.1002/aic.10160](https://doi.org/10.1002/aic.10160).
- 11- Elfil H., Nawel R., Gadri A., Bollinger J. C., Chemical inhibition of gypsum precipitation at 30°C using Quartz Crystal Microbalance. *European Journal of water quality* , 35/2 (2004) 161-176, DOI: <http://dx.doi.org/10.1051/water/20043502161>
- 12- Elfil H., Manzola A., Ben Amor M., Decarbonation of geothermal water by seeding with aragonite crystals coupled with air bubbling, *Applied Geochemistry*, 18 (2003) 1137-1148; DOI:[10.1016/S0883-2927\(03\)00013-1](https://doi.org/10.1016/S0883-2927(03)00013-1).
- 13- Manzola A., Elfil H., Ben Amor M., Scaling phenomena with geothermal water: Influence of wood on CaCO<sub>3</sub> precipitation. *Journal de la Société Chimique de Tunisie*; 5, (2003) 145-157.
- 14- Alimi F., Elfil H., Gadri A., Kinetics of the precipitation of calcium sulfate dihydrate in a desalination unit, *Desalination*, 158 (2003) 9-16; DOI Elfil H., Roques H, Role of hydrate phases of calcium carbonate on the scaling phenomenon, *Desalination*, 137 (2001) 177-186; DOI:[10.1016/S0011-9164\(01\)00216-8](https://doi.org/10.1016/S0011-9164(01)00216-8).
- 15- Elfil H., Roques H., Role of quartz microbalance in the study of calcium carbonate germination;

*Entropie*; 231 (2001) 28-37.

- 16- Tili M., El Fil H., Ben Amor M. The Chemical inhibition of the Scale formation: determination of the efficient concentration of inhibitors by LCGE and CEG techniques. *Cahiers de l'Association Scientifique Européenne pour l'Eau et la Santé*, 6/1 (2001) 29 – 96 ; DOI: <http://dx.doi.org/10.1051/asees/20010601029>.
- 17- Elfil H., Roques H., Scaling phenomenon with geothermal water. Part III : Seeding accelerator effect on CaCO<sub>3</sub> precipitation ; *Journal de la Société Chimique de Tunisie*; 4/9 (2001) 1095-1110.
- 18- Elfil H., Roques H., Scaling phenomenon with geothermal water. Part II : Study of cristallization compagnion influences ; *Journal de la Société Chimique de Tunisie*; 4/9 (2001) 1079-1093.
- 19- Elfil H., Roques H., Scaling phenomenon with geothermal water. Part I: Site phenomenon Study and comparison with pure Ca-carbonic system; *Journal de la Société Chimique de Tunisie*; 4/9 (2001) 1093-1077.
- 20- Elfil H., Roques H., Contribution to study of scaling mechanism. P.10 : Physic signification of Precipitation Limit Straight. *Tribune de l'Eau*, 499/3 (1999) 27-52.
- 21- Elfil H., Martin-Dominguez, Roques H., Contribution to study of scaling phenomena. P.9: Study of germination conditions at 30 °C. *Tribune de l'Eau*, 594/4 (1998) 37-62.
- 22- Elfil H., Srasra E., Dogguy M., physical-chemical Characterization of some clay used in ceramic industry. *Journal of Thermal Analysis*, 44 (1995) 663-683; DOI: [10.1007/BF02636285](https://doi.org/10.1007/BF02636285).

#### ✓ CONFERENCE PAPERS

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