



Hafedh KOCHKAR

Full Professor

Head of Catalysis Lab

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Specialization: Physical-Chemistry

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Introduction

Hafedh Kochkar is Full Professor in chemistry at Imam Abdulrahman Bin Faisal University; in the field of materials engineering and nanomaterials for catalysis applications. He obtained his Ph.D., in Chemistry from Claude Bernard University, France (1997) and pursued worldwide post-doctoral research positions at: Institute of Chemical Technology and Engineering, Aachen, Germany (1998-2000) and IRCELyon of National Scientific Research Center (CNRS) in collaboration with Renault Research Center, France (2000-2001). He worked as scientist at ExxonMobil Research and Engineering Corporation in Annandale, New Jersey, USA (2001-2004). He developed continuous flow measurements using the Tapered Element Oscillating Microbalance for MTO process. Prof. Kochkar has excellent skills in kinetic and catalysis. He is a Fellow of the American Sigma Xi Research Society. Prof. Kochkar leads a group of research scholars working in the field of materials engineering and catalysis. Prof. Kochkar has 6 patents (European, TN, US and International); two patents are used in industry. He is leading many projects with Laboratories and Institutes from the European union. Prof. Kochkar has an expertise in the evaluation of bilateral research projects under the umbrella of relations between the EU and Tunisia. From November 2018, he created a new catalysis unit at Imam Abdulrahman Bin Faisal University.

Professional Profile

Since September 2017: Full Professor at Imam Abdulrahman Bin Faisal University, Dammam, KSA.

September 2015-August 2017 : Full Professor at the University of Tunis El-Manar, Tunis, Tunisia.

October'05-August'15: Associate Professor at the National Research Center in Materials Sciences. Technopark of Borj cedria, Tunis.

- Teaching Analytical and environmental Chemistry for engineering levels.
- Full Researcher position: photodegradation of organic and biological pollutants in wastewaters.



Oct.'04-Sep.'05: Assistant Professor at El-Manar University,

- Teaching Analytical Chemistry for engineering levels.
- Full Researcher position in the Department of Chemistry

June' 01-June'04: Researcher at ExxonMobil Research and Engineering Corporation in Annandale, New Jersey, USA.

- Decomposition of MeOH over mixed metal oxides (MMO) to Syn-gas.
- Investigated the role of carbon pool, reaction of hydrocarbons in zeolites in Methanol To Olefins process (MTO).
- FTIR studies of the effect of coke on acidic sites in the MTO process.
- In-situ MTO reaction kinetics and coking kinetics studies using a plug flow vibration-microbalance to understand catalyst deactivation.

Feb.'00-Feb' 01: Post.doc with Dr. François Figueras at the Institut de Recherches sur la Catalyse et l'Environnement de Lyon (IRCELYon) of **the National French Research Center (CNRS), France in collaboration with Renault company.**

- Partial oxidation of aromatics over metal-modified zeolites and/or Mixed Metal Oxides in the liquid phase in presence of peroxides.
- Developed sulfur tolerant **NO_x trap catalysts for environmental applications**. The trapped NO_x is later released as N₂.

Feb.'98-Dec.'99: Postdoctoral fellow position with Prof. Wolfgang Hölderich, Department of Chemical Engineering and Catalysis, **Institute of Chemical Technology and Heterogeneous Catalysis, RWTH Aachen, Germany**. Project sponsored by the European community with industrial partners (Degussa-Hüls AG, Paints..).

- Improvement of existing technology for the regioselective oxidation of alcohols and biodegradable starch for resins paints and paper coating applications.
- Developed and optimized a fluidized bed reactor for oxidation of primary alcohols with NO₂.

Education

2004-2009: Habilitation to Manage Research, HDR University El-Manar in the field of Nanomaterials.

Dissertation title: "Elaboration, Characterization and Catalytic Properties of metal/oxides Nanomaterials"

1994-1997: Ph.D. Dissertation in Catalysis (Dec., 1997), **University Claude Bernard Lyon1**. Institut de Recherches sur la Catalyse et l'Environnement de Lyon (IRCELYon) of the National Scientific Research Center (CNRS), **Lyon, France**.



Dissertation title: "Synthesis Characterization and Catalytic test of Hydrophobic Mesoporous TiO_2 - SiO_2 mixed oxides for the oxidation in the liquid phase, Advisor: Dr François Figueras".

1992-1994: Master Degree in chemistry (June, 1994), University of Tunis II, Tunisia. **(Major of promotion)**

1988-1992: Engineer in Chemistry (June 1992), University of Tunis II, Tunisia. **(Major of promotion).**

8 PATENTS issued (EP, FR, DE, US , TN and WO).

Published 48 articles

Book Chapter in 1 In: Palladium: Compounds, Production and Applications, edited by Nova Science Publishers, Inc.

Review ‘Nanoscale Advances of Carbon-Titanium Dioxide Nanomaterials in Photocatalysis Applications’ Reviews in Nanoscience and Nanotechnology Vol. 4, pp. 1–27, 2016.

-COMMUNICATIONS (69) AND PLENARY LECTURES (5)

PEER REVIEW

- Applied Catalysis B
- Microporous and Mesoporous Materials

LANGUAGES

- French and English (Excellent level)
- German (Scholar level).

MEMBERSHIPS

- American Chemical Society
- Sigma Xi
- Société Française de Chimie.

REFERENCES

Upon Request.

SCIENTIFIC PROJECTS

COORDINATOR

- French (2), Spain (2), KSA (1) and India (1).

SUPERVISOR

- Master Degree (8)
- Ph.D (6)



Research Interests

Dr. Kochkar's research interests are in the areas heterogeneous catalysis in academia and in collaboration with companies (*Degussa-Hüls AG (DE)*, *Renault (FR)*, *Biop GmbH (DE)*, *Cargill (UK)*, *Cargill BV (Netherlands)*, *ICI Paints (UK)*, *Resins & Polymers (Greece)*, *VTT Biotechnology and Food Research (Finland)*, *Raisio Chemicals (Finland)* and *ExxonMobil (USA)*). He has worked on fundamental aspects of acid-base and redox catalysis with the aim of understanding the nature of the active sites, reaction mechanisms, formal mechanisms and kinetics.

He has interests in the control of the shape of a metallic nanocrystal to well defined morphologies characterized by the preferential exposition of crystallographic planes. This selective exposition of facets allows us to establish direct surface structure-reactivity relationships for structure-sensitive reactions contrary to isotropic particles presenting a high proportion of defects, corners, or edge sites with high index facets.

He developed TiO₂ nanomaterials with controlled morphologies (nanotubes, nanorods, nanowires) and TiO₂-C₆₀ nanocomposites for photocatalysis and energy applications (degradation of organic and biological compounds in water; water splitting).

Teaching Interests

Pr. Kochkar's teaching interests are:

- Strategies of elaboration of nanomaterials for Master Degree,
- Industrial Chemical Processes for Chemical Engineer Level,
- Heterogeneous catalysis and Kinetics for Engineer Level,
- Separation techniques for Engineer Level,
- Thermodynamic courses for Engineer Level.



PUBLICATIONS

($h_{\text{index}}=21$, citations =1308)

- 48) E. Zghab, M. Hamandi, F. Dappozze, H. Kochkar, M. Saïd Zina, C. Guillard, G. Berhault, “ Influence of graphene and copper on the photocatalytic response of TiO₂ nanotubes”, **Materials Science in Semiconductor Processing** **107** (2020)104847.
- 47) A. Bin Sadi, R. AlBilali, S. A. Abubshaita, H. Kochkar, “ Low temperature design of titanium dioxide anatase materials decorated with cyanuric acid for formic acid photodegradation” **Journal of Saudi Chemical Society** (2020) **24**, 351–363, <https://doi.org/10.1016/j.jscs.2020.01.009>
- 46) M. Hamandi, M. Triki, J. Llorca, F. Jomni, N. A. Alomair, H. Kochkar, “ Investigation of physicochemical and electrical properties of TiO₂ nanotubes/graphene oxide nanocomposite” **Bull. Mater. Sci.** (2020) **43:109**. (<https://doi.org/10.1007/s12034-020-2072-1>)
- 45) R. Jebali, M. Triki, N. A. Alomair, H. Kochkar, “ From adsorption of rare earth elements on TiO₂ nanotubes to preconcentration column application”, **Microchemical Journal** **149** (2019) 104024.
- 44) M. Hamandi, G. Berhault, F. Dappozze, C. Guillard, H. Kochkar, “Titanium dioxide nanotubes/polyhydroxyfullerene composites for formic acid photodegradation” **Applied Surface Science** **412** (2017) 306-318
- 43) M. Hamandi, G. Berhault, C. Guillard, H. Kochkar, “Reduced graphene oxide/TiO₂ nanotube composites for formic acid photodegradation” **Appl. Catal. B** **209** (2017) 203–213
- 42) M. Hamandi, G. Berhault, C. Guillard, H. Kochkar, “Influence of Reduced Graphene Oxide on the Synergism between Rutile and Anatase TiO₂ Particles in Photocatalytic Degradation of Formic Acid”. **Molecular Catalysis** **432** (2017) 125-130
- 41) M. Triki, H. Tanazefti, H. Kochkar, Design of β -cyclodextrin modified TiO₂ nanotubes for the adsorption of Cu(II): Isotherms and kinetics study, **J. Colloid Interface Sci.** **493** (2017) 77–84



- 40) R. Castiello, J. M. Romo-Herrera, M. H. Farías, E. D. Guerra, O. E. Contreras, G. Berhault, H. Kochkar, S. Fuentes, G. Alonso-Nuñez, Green seed-mediated synthesis and morphology of Au nanoparticles using β -cyclodextrin, **Gold Bulletin** **49** (2016) 75-51.
- 39) M. Meksi, A. Turki, H. Kochkar, L. Bousselmi, C. Guillard, G. Berhault, The Role of Lanthanum in the Enhancement of Photocatalytic Properties of TiO_2 Nanomaterials obtained by Calcination of Hydrogenotitanate Nanotubes, **Appl. Catal. B** **181** (2016) 651-660.
- 38) M. Meksi, H. Kochkar, G. Berhault, C. Guillard, Effect of Cerium Content and Post-Thermal Treatment on Doped Anisotropic TiO_2 Nanomaterials and Kinetic Study of the Photodegradation of Formic Acid, **J. of Molecular Catalysis A**. **409** (2015) 162-170.
- 37) M. Meksi, M. Hamandi, G. Berhault, C. Guillard, H. Kochkar, Design of La-C60/ TiO_2 nanocomposites: Study of the Effect of Lanthanum and Fullerenol Addition Order onto TiO_2 –Application for the Photocatalytic Degradation of Formic Acid, **Chem. Lett.** **44** (2015) 1774-1776.
- 36) M. Meksi, H. Kochkar, Penicillin G Adsorption Isotherms and Kinetic Studies Using TiO_2 Nanotubes Free and Modified with β -Cyclodextrin, **Chem. Lett.** **44** No.10 (2015) 1289-1291.
- 35) M. Meksi, H. Kochkar, “Design of TiO_2 Nanorods and Nanotubes Doped with Lanthanum and Comparative Kinetic Study in the Photodegradation of formic acid”, **Catal. Commun.** **61**(2015) 107-111.
- 34) A. Turki, F. Dappozze, C. Guillard, G. Berhault, Z. Ksibi, H. Kochkar, “Phenol Photocatalytic Degradation over Anisotropic TiO_2 Nanomaterials: Adsorption Kinetics, Isotherms and Mechanisms”, **Appl. Catal. B** **163** (2015) 404–414.
- 33) A. Mehri, H. Kochkar, G. Berhault, D.F. C3mbita Merch3n, T. Blasco, “Elaboration of Anisotropic Gold Particles supported on Hybrid TiO_2 Nanomaterials-Application in the Selective Oxidation of Benzyl Alcohol”, **Mater. Chem. Phys.** **149-150** (2015) 59-68.
- 32) A. Mehri, H. Kochkar, “Elaboration of TiO_2 nanocrystallites elaborated by Sol-gel method with Soluble Starch Stabilization and coupling of Hydrothermal and Biological Extraction”. **Chem. Lett.** **43** (2014) NO9 1487-1489.



- 31) A. Mehri, H. Kochkar, "In situ generated H_2O_2 over supported Pd-Au clusters into hybrid titania nanocrystallites". **Chem. Lett.** **43** (2014) NO7 1046-1048. doi:10.1246/cl.140115.
- 30) A. Turki, C. Guillard, F. Dappozze, G. Berhault, Z. Ksibi, H. Kochkar, "Design of TiO_2 Nanomaterials for the Photodegradation of Formic Acid - Adsorption Isotherms and Kinetics Study". **J. Photochem. Photobiol. A: Chem** **279** (2014) 8-16.
- 29) C. Gannoun, A. Turki, H. Kochkar, R. Delaigle, P. Eloy, A. Ghorbel, E.M. Gaigneaux, "Elaboration and Characterization of sulfated and unsulfated V_2O_5/TiO_2 Nanotubes Catalysts for Chlorobenzene Total Oxidation" **Appl. Catal. B** **147** (2014) 58-64.
- 28) A. Turki, H. Kochkar, C. Guillard, G. Berhault, A. Ghorbel "Effect of Na Content and Thermal Treatment of Titanate Nanotubes on the Photocatalytic Degradation of Formic Acid". **Appl. Catal. B** **138-139** (2013) 40- 415.
- 27) A. Turki, H. Kochkar, I. García-Fernández, M.I. Polo-López, A. Ghorbel, C. Guillard, G. Berhault, P. Fernández-Ibáñez. "Solar photocatalytic inactivation of *Fusarium Solani* over TiO_2 nanomaterials with controlled morphology-Formic acid effect". **Catal. Today** **209** (2013) 147-152.
- 26) A. Mehri, H.Kochkar, S.Daniele, V.Mendez, A. Ghorbel, G. Berhault,"One-pot Deposition of Palladium on Hybrid TiO_2 Nanoparticles and Catalytic Applications in Hydrogenation". **J. Colloid Interface Sci.** **369** (2012) 309–316.
- 25) G. Berhault, H. Kochkar, A. Ghorbel "Shape-controlled Synthesis of Silver and Palladium Nanocrystals using β -Cyclodextrin" **MRS Proceedings / Volume 1446 / 2012. Copyright © Materials Research Society 2012. DOI:** <http://dx.doi.org/10.1557/opl.2012.917>.
- 24) A. Turki, H. Kochkar, P. Fernández-Ibáñez, C. Guillard, G. Berhault, I. García-Fernández, M.I. Polo-López, A. Ghorbel, "Hydrothermal Elaboration of Titanate Nanotubes, Nanowires and Nanorods and Photocatalytic Properties Evaluation" 7th European Meeting on Solar Chemistry and Photocatalysis/Environmental Applications, 2012, pp. 177-179.
- 23) A.Turki, P.Fernández Ibáñez, A. Ghorbel, H. Kochkar, C. Guillard, G. Berhault. "Synthesis Design of TiO_2 Nanotubes and Nanowires and Photocatalytic Applications in the Degradation of Organic Pollutants



- in the Presence or not of Microorganisms”. MRS Proceedings / Volume 1442 / 2012. Copyright © Materials Research Society 2012. DOI: <http://dx.doi.org/10.1557/opl.2012.848>
- 22) A. Turki, H. Kochkar, C.Guillard, G.Berhault, A. Ghorbel, ‘‘ Photocatalytic Efficiency of TiO₂ Nanotubes, Nanowires and Nanorods in Water Treatment’’, Sustainable Water Management, 2013, pp. 159-160.
- 21) B.Kefi, L. Atrous, H. Kochkar, A. Ghorbel, ‘‘ TiO₂ nanotubes as solid-phase extraction adsorbent for the determination of polycyclic aromatic hydrocarbons in environmental water samples’’ **J. Environ. Sci., 23(5) (2011) 860-867.**
- 20) B. Abida , L. Chirchi , S.Baranton, T. Wilhelmin, H. Kochkar, J. Leger, A. Ghorbel, ‘‘ Preparation and characterization of Pt/TiO₂ nanotubes catalyst for methanol electro-oxidation’’ **Appl. Catal. B 106 (3-4) (2011) 609-615.**
- 19) H. Kochkar, G. Berhault, M. Aouine, A. Ghorbel, ‘‘ New alternative to silver MTPs and palladium Nano-Urchins like structure using β-cyclodextrin as structuring agent’’ **J. Phys. Chem. C, 115 (23) (2011)11364-11373.**
- 18) M. Triki, H. Kochkar, G. Berhault, A. Ghorbel, ‘‘ Highly Active Ruthenium Catalysts Supported on Nanostructured Titanates for Application in Catalytic Wet Air Oxidation of p-Hydroxybenzoic Acid’’, **Reac. Kinet. Mech. Cat. 101(2010) 377-386.**
- 17) A. Mehri, H. Kochkar, S. Daniele, V. Mendez, A. Ghorbel, G. Berhault, ‘‘One-Pot Deposition of Palladium on Hybrid TiO₂ Nanoparticles: Application for the Hydrogenation of Cinnamaldehyde’’ , **Stud. Surf. Sci. Catal., 175 (2010) 605-608.**
- 16) A. Turki, H. Kochkar, G. Berhault, A. Ghorbel ‘‘p-Hydroxybenzoic Acid Degradation by Fe/Pd-HNTs Catalysts with In Situ Generated Hydrogen Peroxide’’, **Stud. Surf. Sci. Catal., 175 (2010) 593-596.**
- 15) K. Jabou, H. Kochkar, G. Berhault, A. Ghorbel, ‘‘ Catalytic Activity of Nanostructured Pd Catalysts supported on Hydrogenotitanate Nanotubes’’, **Stud. Surf. Sci. Catal., 175 (2010) 609-612.**
- 14) K. Jabou, H. Kochkar, G. Berhault, A. Ghorbel, ‘‘Preparation and Catalytic Activity of Nanostructured Pd Catalysts supported on Hydrogenotitanate Nanotubes’’, **J. Mater. Sci 44 (2009) 6677-6682.**



- 13) H. Kochkar, N. Lakhthar, G. Berhault, M. Bausach and A. Ghorbel, "Optimization of the Alkaline Hydrothermal Route to Titanate Nanotubes by a Doehlert Matrix Experience Design" **J. Phys. Chem. C**, **113 (2009) 1672-1679**.
- 12) H. Kochkar, A. Turki, L. Bergaoui, G. Berhault, and A. Ghorbel "Study of Pd(II) adsorption over titanate nanotubes of different diameters". **J. Colloid Interface Sci.** **331(2009) 27-31**.
- 11) H. Kochkar, M. Triki, K. Jabou, G. Berhault and A. Ghorbel, "Novel synthesis route to titanium oxides nanomaterials using soluble starch". **J. Sol-Gel Science and Technology**, **42 (2007) 27-33**.
- 10) H. Kochkar, M. Triki and A. Ghorbel "Preparation of Stable Mesoporous Titanium Oxides using soluble starch". **Stud. Surf. Sci. Catal.**, **162 (2006) 377-384**.
- 9) M.L. Kantam, H. Kochkar J.M Clacencs, B. Veldurthy, A.Garcia-Ruiez, F. Figueras, " Mg-La mixed oxides as highly active and selective heterogeneous catalysts for Wadsworth-Emmons reactions" **App. Catal. Environmental** **55 (2005) 177-183**.
- 8) J.M Clacencs, R. Montiel, H. Kochkar, F. Figueras, " Pt-free Sulfur resistant NOx traps" **App. Catal. Environmental** **53 (2004) 21-27**.
- 7) H. Kochkar, J.M Clacencs, F.Figueras, "Isomerization of styrene epoxide on basic solids". **Catal. Lett.**, **79, No1-4 (2002) 91-94**.
- 6) H. Kochkar, M. Morawietz and W. F. Hölderich., "NO₂ catalyzed the oxidation of primary hydroxyl groups of starch". **Appl. Catal., A** **210 (2001) 325-328**.
- 5) H. Kochkar, L. Lassalle, M. Morawietz and W. F. Hölderich, "Regioselective oxidation of primary hydroxyl groups of sugar and its derivatives using silver catalysts mediated by TEMPO in water". **J. Catal**, **194 (2000) 343-351**.
- 4) H. Kochkar, M. Morawietz and W. F. Hölderich, **Stud. Surf. Sci. Catal.**, **130 (2000) 545-550**.
- 3) F. Figueras, H. Kochkar, "Effects of the hydrophobicity on the epoxidation of cyclohexene by tertbutyl hydroperoxide on TiO₂-SiO₂ mixed oxides." **Catal. Lett.**, **59 (1999) 79-81**.



- 2) H.Kochkar, F. Figueras, S.Caldarelli, "Crystallization of Hydrophobic Mesoporous Titano-Silicates useful as epoxidation catalysts". **Microporous Mesoporous Materials**, **39 (2000) 249-256**.
- 1) H.Kochkar, F. Figueras, "Synthesis of hydrophobic TiO₂-SiO₂ mixed oxides for the epoxidation of cyclohexene", **J. Catal.** **171 (1997) 420-430**.

Book Chapter

G. Berhault, H. Kochkar "Shape-Controlled Synthesis of Palladium Nanoparticles: Mechanism of Formation and Applications", **Chapitre 1** In: Palladium: Compounds, Production and Applications ISBN 978-1-61761-733-1 Editor: Kenneth M. Brady, pp.1-56© 2010 Nova Science Publishers, Inc.

Review

M. Hamandi, M. Meksi, H. Kochkar" *Nanoscale Advances of Carbon-Titanium Dioxide Nanomaterials in Photocatalysis Applications*" **Reviews in Nanoscience and Nanotechnology Vol. 4, pp. 1–27, 2016.**

PATENTS (8)

1. H. Kochkar, W. F. Hölderich, R. Vanheertum, M. Morawietz, "Regioselective oxidation of primary hydroxyl groups of sugar and its derivatives using new method mediated by TEMPO in water". **EP 1 086 938 (A2), DE 6000 6049 (T2)**.
2. M. Guyon, J-C.Bezia, F.Figueras, H. Kochkar, J.M. Clacens. "New Trapping NO_x Catalysts resistant to deactivation by SO_x". **FR 2 813 468(A1), FR 2834228 (A1)**.



3. M. Guyon, F. Figueras, J.M. Clacens, J-C. Bezia, H. Kochkar, "New Trapping NO_x Catalysts resistant to deactivation by SO_x". **EP 1 308 209 A1**.
4. F. Figueras, H. Kochkar, M. L. Kantam "Methods for preparing solid basic Wadsworth-Emmons reaction catalyst". **WO 03 059 514 (A1)**.
5. S.C. Fung, R.B. Hall, H. Kochkar, K.G.Strohmaier, N. P. Coute, K.R. Clem. "Method for using stabilizing catalyst activity during MTO unit operation". **WO 2005078064, US 7,355,086, US 7,033,971 (B2), EP 1713898 (A1), EP1713898 (A0), Big patents 4064/DELNP**.
6. H. Kochkar, R. Jebali. "Extraction en Phase Solide des éléments de terres rares sur des nanotubes d'oxyde de titane ", **TN2013/0061**.
7. H. Kochkar, N. Abdullah Alomair, R. Khalid Albilali, S.Saud AlJameel," Device and method for antibiotic removal from dairy products" **US 16/564,644**
8. H. Kochkar, Shahad Eid Al-Ruwili, Afnan Marwan Karkour, Abeer Monther Al-Osaiba, Dana Khalid Al-Saqer, Rawan Mohammed Al-Jrayyan," activated carbon material derived from waste arabic coffee grounds as bio-sorbent" **Under review iau patent office**.

PLENARY LECTURES (6)

- Plenary Lecture Presented in the 'Indian Institute of Chemical Technology (IICT)', **26th November 2010, Hyderabad, INDIA**.
- Plenary Lecture Presented at the "Tunisia-India Workshop (TIW 2014) on Nanomaterials & Nanotechnology", 28-30th October 2014, Hotel Africa, Tunis.
"DEVELOPING NANOMATERIALS FOR APPLICATIONS IN CATALYTIC PROCESSES OF INDUSTRIAL INTEREST AND GREEN CHEMISTRY"
- Plenary Lecture Presented at the Tunisia-Japan Symposium 2014 R&D on Energy and Materials Science for Sustainable Society (IICT)', November 29th 2014, El Mouradi Hotel, Gammarth, Tunisia.
"ADVANCED NANOMATERIALS AN IDEAL "NANOTOOLS": THE MAJOR CHALLENGES FOR FURTHER DEVELOPMENTS"



- Plenary Lecture Presented to the 13th International Symposium on Environment, Catalysis and Process Engineering, November 23-25th, 2015, Hammamet, Tunisia.

“MAJOR CHALLENGES IN PHOTOCATALYSIS BY ADVANCED TiO₂ NANOMATERIALS”

- Plenary Lecture Presented to the “ colloque Matériaux Avancés & Nanomatériaux pour applications dans le domaine de l'énergie, october 4th 2016, Carthage, Tunis.

“ADVANCED NANOMATERIALS AN IDEAL “NANOTOOLS”: THE MAJOR CHALLENGES FOR FURTHER DEVELOPMENTS”

COMMUNICATIONS (Oral 39 + Poster 30)

Communications (39)

- 1) *“Determination of antimony and arsenic in lead alloy samples using the hydride AA-technique ”*. **Hafedh Kochkar** et Mohamed Dachraoui. Communication orale a été présentée au 2nd **Austro-Tunisien Symposium on Analytical Chemistry, Avril 94, Tunis, Tunisie.**
- 2) *“ Studies of the effect of water and solvents on the catalytic activities of TiO₂-SiO₂ mixed oxides for the epoxidation of olefins”*. **Hafedh Kochkar** et François Figueras. Communication orale a été présentée au **GECAT, 17-24 Juin 1997, Colleville-sur-Mer, France.**
- 3) *“ Influence of various solvents on the catalytic activity performance and selectivity of TiO₂-SiO₂ mixed oxides in epoxidation catalysis”*. **Hafedh Kochkar** et François Figueras. Communication orale a été présentée **aux journées CNRS-IRC, Septembre, 18 1997, Villeurbanne, France.**
- 4) *“ Crystallization of Hydrophobic Mesoporous Titano-Silicates useful as epoxidation catalysts”*. **Hafedh Kochkar** et François Figueras. Oral Communication presented at **Europ Cata IV, 5-10 Septembre 1999, Rimini, Italy.**



- 5) “*Regioselective oxidation of primary hydroxyl groups sugar and its derivatives using a new catalytic route mediated by TEMPO*”. **Hafedh Kochkar** , W. F. Hölderich et, M. Morawietz. Oral Communication presented at **12th International Congress on Catalysis, 9-14 Juillet, 2000, Granada, Spain.**
- 6) “*Isomerization of styrene epoxide on basic solids*”. **Hafedh Kochkar**, Jean Marc Clacens et François Figueras. Oral Communication presented at **Europ Cata V, 2-7 Septembre 2001, Limerick, Ireland.**
- 7) “*Optimisation de l'Élaboration Alcaline des titanates Nanotubes par le plan d'Expériences- Matrice Doehlert*”. **Hafedh Kochkar**, Nesrine.Lakhdhar, Gilles Berhault et Abdelhamid Ghorbel. Oral Communication presented at **40^{ème} réunion GECat-DivCat 2008 du 26-30 mai 2008, Yasmine Hammamet, Tunisie.**
- 8) “*Catalytic Activity of Nanostructured Pd Catalysts supported on Hydrogenotitanate Nanotubes and Alumina*”. **Hafedh Kochkar**, Khaled Jabou, Gilles Berhault et Abdelhamid Ghorbel. Oral Communication presented at **3rd International Symposium, Advanced micro- and mesoporous materials, September 6-9, 2009. Albena resort, Bulgaria.**
- 9) “*Developing nanomaterials for applications in catalytic processes of industrial interest and green chemistry*”. **Hafedh Kochkar** et Abdelhamid Ghorbel. Oral Communication presented at “**10^{ème} Symposium Tuniso-Japonais sur la Société, les Sciences et la Technologie (TJASSST-10), du 11 au 13 Novembre 2009 – Hammamet, Tunisie.**”
- 10) “*Elaboration et Caractérisation de Au-TiO₂ Hybride -Application à l'oxydation d'alcool benzylique*” **A. Mehri**, H. Kochkar, A. Ghorbel. Oral Communication presented at “**Les 16^{ème} Journées Nationales de Chimie**” (JNC16) organisées par la Société Chimique de Tunisie, **du 19 au 22 Décembre 2010, Hôtel Laico- Yasmine Hammamet-Tunisie.**
- 11) “*Directly generation of H₂O₂ from formic acid and O₂ over Pd-Au-TiO₂ catalysts- Application in the selective oxidation of benzyl alcohol*”. **Afef Mehri**, Hafedh Kochkar, Abdelhamid Ghorbel. Oral Communication presented at “**Tunisian Japanese Symposium on Science, Society and Technology**”, **du 11 au 13 Novembre 2011, SAPHIR PALACE, Yasmine Hammamet, Tunisie.**
- 12) “*Photocatalytic activities of Titanate Nanotubes and Titanium Dioxide in the Degradation of Penicillin G (PEG) in Aqueous Media*”. **Manel Meksi**, Hafedh Kochkar and Abdelhamid Ghorbel. Oral Communication



- presented at "Tunisian Japanese Symposium on Science, Society and Technology", **du 11 au 13 Novembre 2011, SAPHIR PALACE, Yasmine Hammamet, Tunisie.**
- 13) "*Effet du Sodium et du Traitement Thermique sur les Propriétés Physico-Chimiques et Photocatalytiques de Nanotubes d'Oxyde de Titane*", **Asma Turki**, Hafedh Kochkar, Gilles Berhault, Chantal Guillard et Abdelhamid Ghorbel. Oral Communication presented at "Les Journées d'Automne 2011" organisées par le Groupe Français de Photochimie, Photophysique et Photoscience (GFP2P, Société Chimique de France) à l'Institut des Sciences Moléculaires d'Orsay, **du 28 au 29 Novembre 2011, Paris, France.**
 - 14) "*Nouvelle méthode d'élaboration des nanoparticules de palladium supportées sur les oxydes de titane hybrides : Application à l'hydrogénation de 3-Nitrostyrène*", **A. Mehri**, H. Kochkar, A. Ghorbel. Oral Communication presented at Cinquièmes Journées de Chimie de l'Etat Solide (JNC5), **du 19-22 Décembre 2011, Hôtel Vincci Eden Star Zarzis-Tunisie.**
 - 15) "*Shape-Controlled Synthesis of nanomaterials for applications in processes of economic interest and green chemistry*", **H. Kochkar**, G. Berhault and A. Ghorbel. Oral Communication presented at "Indo-Tunisian Joint Workshop on Water Science and Technology", **du 1 au 5 Février 2012, Hyderabad, India.**
 - 16) "*Photo-Dégradation de Molécules Biologiques-Intérêt du Contrôle de la morphologie Des Nanoparticules*", **H. Kochkar**, M. Manel, S. Fekih-Zaghib, A. Ghorbel ". Oral Communication presented at "VIIème Congrès International QPE-TVR 2012", **du 20 au 22 Avril 2012, Hôtel Nour Palace Mahdia, Tunisie.**
 - 17) "*Synthesis Design of TiO₂ Nanotubes and Nanowires and Photocatalytic Applications in the Degradation of Organic Pollutants in the Presence or not of Microorganisms*", Asma Turki, Pilar Fernández Ibáñez, Abdelhamid Ghorbel, Hafedh Kochkar, Chantal Guillard et **Gilles Berhault**. Oral Communication presented at "Titanium Dioxide Nanomaterials" au congrès "Materials Research Society" dans sa session du printemps 2012 "MRS Spring Meeting & Exhibit", **du 9 au 13 Avril 2012, San Francisco, Californi, USA.**
 - 18) "*Solar Photocatalytic Inactivation of Fusarium Solani Over TiO₂ Nanomaterials With Controlled Morphology – Formic Acid Effect*", **A. Turki**, H. Kochkar, I. Garcia-Fernández, M.I. Polo-López, A. Ghorbel, C. Guillard, G. Berhault et P. Fernández-Ibáñez. Oral Communication presented at "7th European



Meeting on Solar Chemistry and Photocatalysis: Environmental Applications" (SPEA7), *du 17 au 20 Juin 2012, Oporto, Portugal.*

- 19) "*Génération in-situ de H₂O₂ en présence des catalyseurs bimétalliques Pd-Au supportés sur l'oxyde de titane hybride Application à l'oxydation sélective d'alcool benzylique*", **Afef Mehri**, Hafedh KOCHKAR, Abdelhamid Ghorbel. Oral Communication presented at "Les 17^{ème} Journées Nationales de Chimie" (JNC17) organisées par la Société Chimique de Tunisie, *du 17 au 19 Décembre 2012, Monastir, Tunisie.*
- 20) "*Elaboration et Caractérisation d'oxydes de titane de morphologies contrôlées –Application à la Dégradation Photocatalytique de l'Acide Formique*", **Asma Turki**, Hafedh Kochkar, Gilles Berhault, Chantal Guillard et Abdelhamid Ghorbel. Oral Communication presented at "Les 17^{ème} Journées Nationales de Chimie" (JNC17) organisées par la Société Chimique de Tunisie, *du 17 au 19 Décembre 2012, Monastir, Tunisie.*
- 21) "*Etude cinétique de la photo-dégradation de la pénicilline G en milieu aqueux sur les nanotubes d'oxyde de titane*". **Manel Meksi**, Hafedh Kochkar, Sonia Fekih-Zaghib et Abdelhamid Ghorbel. Oral Communication presented at "Les 17^{ème} Journées Nationales de Chimie" (JNC17) organisées par la Société Chimique de Tunisie, *du 17 au 19 décembre 2012, Monastir, Tunisie.*
- 22) "*Shape-controlled synthesis of silver and palladium nanocrystals using β -cyclodextrin*" **Hafedh Kochkar**, Gilles Berhault, Zouhair Ksibi and Abdelhamid Ghorbel. Oral Communication presented at "Second Euro-Mediterranean Meeting on Functionalized Materials:EMM-FM2013", *du 24 au 28 Mars 2013, Hotel El-MOURADI, Hammamet, Tunisie.*
- 23) "*Photocatalytic Efficiency of TiO₂ Nanotubes, Nanowires and Nanorods in Water Treatment*", **Asma Turki**, Hafedh Kochkar, Chantal Guillard, Gilles Berhault, Abdelhamid Ghorbel. Oral Communication presented at "International Joint Conference, CB-WR-MED Conference/2nd AOP'Tunisia Conference for Sustainable Water Management", *du 24 au 27 Avril 2013, Tunis, Tunisie.*
- 24) "*Design of TiO₂ nanotubes and nanorods doped with lanthanum for the Photocatalytic degradation of formic acid*". **Manel Meksi**, Hafedh Kochkar, Gilles Berhault, Chantal. Guillard and Zouhaier Ksibi. Oral Communication presented at " International Chemical Engineering Congress", *du 16 au 19 Décembre 2013, Hotel El-Mouradi Djerba Menzel, Djerba, Tunisie.*



- 25) *"Elaboration of TiO₂ nanoparticles elaborated by Sol-gel method with Soluble Starch Stabilization and coupling of Hydrothermal and Biological Extraction"*. **Afef Mehri**, Hafedh Kochkar and Z.Ksibi. Oral Communication presented at " International Chemical Engineering Congress", *du 16 au 19 Décembre 2013, Hotel El-Mouradi Djerba Menzel, Djerba, Tunisie.*
- 26) *"Application of Nanomaterials in Catalytic Wet Air Oxidation Process"* **Mohamed Triki**, Zouhaier Ksibi and Hafedh Kochkar. Oral Communication presented at Tunisia-India Workshop (TIW 2014) on Nanomaterials & Nanotechnology, *du 28 au 30 Octobre 2014, Hotel Africa, Tunis.*
- 27) *" Phenol Photodegradation over Anisotropic TiO₂ nanomaterials: adsorption and kinetic study"* **Asma Turki**, Chantal Guillard, Frédéric. Dappozze, Zouhaier Ksibi, Gilles. Berhault and Hafedh Kochkar. Oral Communication presented at Tunisia-Japan Symposium 2014 R&D on Energy and Materials Science for Sustainable Society (IICT)', *du 28 au 30 Novembre 2014, El Mouradi Hotel, Gammarth, Tunisia.*
- 28) *" Cerium doped TiO₂ Nanotubes: Photocatalytic Behavior on the Degradation of Formic Acid"* **Manel Meksi**, Hafedh Kochkar, Chantal Guillard, Gilles Berhault and Zouhaier Ksibi. Oral Communication presented at Tunisia-Japan Symposium 2014 R&D on Energy and Materials Science for Sustainable Society (IICT)', *du 28 au 30 Novembre 2014, El Mouradi Hotel, Gammarth, Tunisia.*
- 29) *"Enhancement of photocatalytic activity of TiO₂ nanotubes by polyhydroxyfullerene"*. **Marwa Hamandi**, Taieb Saied, Gilles Berhault, Zouhaier Ksibi et Hafedh Kochkar, Oral Communication presented at " Journées Nationales de Chimie, *du 21 au 23 Décembre 2014, El Mouradi Skanes Hotel, Monastir, Tunisia.*
- 30) *"Design of hybrid TiO₂-cyanuric acid nanocomposites - application for the photodegradation of formic acid"*. **Ons Hannafi**, Zouhaier Ksibi et Hafedh Kochkar, Oral Communication presented at " Journées Nationales de Chimie, *du 21 au 23 Décembre 2014, El Mouradi Skanes Hotel, Monastir, Tunisia.*
- 31) *" Novel synthesis of fullerene-TiO₂ nanocomposite: Impact of heat treatment on stability and photocatalytic efficiency"*. Marwa HAMANDI, Gilles BERHAULT, Chantal GUILLARD, Zouhaier KSIBI, Hafedh KOCHKAR. Oral Communication presented at **13th International Symposium on Environment, Catalysis and Process Engineering, du 23 au 25 Novembre 2015, Hammamet, Tunisie.**



- 32) "Impact of reduction degree of graphene oxide on the photocatalytic activity of graphene oxide/TiO₂ nanotubes". M. Hamandi, G. Berhault, C. Guillard, H. Kochkar. Oral Communication presented at **European Graphene Forum EGF 2016, 1-3 june 2016, Paris, France.**
- 33) M. Hamandi, G. Berhault, C. Guillard, H. Kochkar, "Impact of Reduction Degree of Graphene Oxide on the Photocatalytic Activity of Graphene Oxide/TiO₂ Nanotubes" Oral Communication presented at **European Graphene Forum 2016 du 1 au 3 juin 2016, Paris, France.**
- 34) G. Berhault, H. Kochkar "Shape Matters: Nanoscale Control of Heterogeneous (Photo)Catalysts and its Consequence on Reactivity" Centro de Nanociencias y Nanotecnología, Universidad Autonoma de Mexico, **19 octobre 2016, Ensenada, Mexique. Conférence invitée.**
- 35) M. Hamandi, G. Berhault, H. Kochkar, C. Guillard, "Does Graphene Improve the Photocatalytic Efficiency of TiO₂?" 21st Semiconductor Photocatalysis and Solar Energy Conversion (SPASEC-21), du **14-16 novembre 2016, Atlanta, Etats-Unis. Keynotes.**
- 36) M. Hamandi, H. Kochkar, C. Guillard, G. Berhault, "Enhanced Photocatalytic Activity of Reduced Graphene Oxide/TiO₂ Nanotubes Composites For Formic Acid Degradation" 10th European Meeting on Solar Chemistry and Photocatalysis: Environmental Applications. **Oral communication presented June 4th 2018, France.**
- 37) Ashwaq Saud Bin Sadi, Reem Khaled AlBilali, Nuhad Abdullah Alomair, and Hafedh Kochkar, "Design of low temperature hybrid TiO₂ -cyanuric acid nanocomposites – application in the photodegradation of organic pollutants in water". NanoMAT2019 – 2nd International Conference on Nanomaterials and Their Applications, **April 27-29th, 2019, Hammamet, Tunisia. Oral communication.**
- 38) E. Zghab, M. Hamandi, F. Dappozze, H. Kochkar, M. Saïd Zina, C. Guillard, G. Berhault, "Influence of Graphene and Copper on the Photocatalytic Response of TiO₂ Nanotubes", 2019 Spring Meeting, Acropolis Congress Centre in Nice (France), **from May 27 to 31 2019. Oral communication.**
- 39) E. Zghab, M. Hamandi, F. Dappozze, H. Kochkar, M. Saïd Zina, C. Guillard, G. Berhault, "Graphene as a 2D Support Shuttle for Separating Photogenerated Charges: an Example combining Copper and TiO₂ Nanotubes", CIMTEC 2020 9th FORUM ON NEW MATERIALS Montecatini Terme, Italy **June 20-23, 2020. Oral communication.**



POSTER (30)

- 1) “ *Synthesis and characterisation of hydrophobic TiO₂-SiO₂ mixed oxides*”. **Hafedh Kochkar**, François Figueras. Presented at IV Colloque Franco-Maghrebin sur la Catalyse, **10-14 June 1996, Lille-France.**
- 2) “ *Sulfur resistant NOx traps*”. Jean Marc Clacens, R. Montiel, H. Kochkar F. Figueras, M. Guyon, Jean Christophe Beziat. Communication par affiche présentée au 13th International Congress on Catalysis, **11-16th July 2004, Paris, France.**
- 3) “ *Preparation of Stable Mesoporous Titanium Oxides via modified sol-gel method with surfactants*”. **Mohamed Triki**, Hafedh Kochkar, Zouhaier Ksibi et Abdelhamid Ghorbel. Communication par affiche présentée au 13th International WorkShop on Sol-Gel Science and Technology, **21-26th August 2005 - University of California, Los Angeles, USA.**
- 4) “ *Preparation of Stable Mesoporous Titanium Oxides via modified sol-gel method with surfactants*”. **Hafedh Kochkar**, Mohamed Triki et Abdelhamid Ghorbel. Presented at the 9th International Symposium on the Scientific Bases for the preparation of Heterogeneous Catalysts, **9-14th September 2006-University of Louvain-la-Neuve, Belgium.**
- 5) “ *Elaboration et caractérisation de catalyseurs à base de Pd supporté sur des hydrogénotitanates et leur valorisation en catalyse d’hydrogénation*”. **Khaled Jabou**, Hafedh Kochkar, Gilles Berhault, Abdelhamid Ghorbel. Presented at the 40^{ème} réunion GECat-DivCat 2008 **du 26-30 mai 2008, Yasmine Hammamet, Tunisie.**
- 6) “ *Etude de la stabilité thermique des hydrogénotitanates (HNTs) Nanotubes*”. **Hafedh Kochkar**, Gilles Berhault et Abdelhamid Ghorbel. Presented at the 40^{ème} réunion GECat-DivCat 2008 **du 26-30 mai 2008, Yasmine Hammamet, Tunisie.**
- 7) “ *Dépôt sélectif de Pd sur des nanoparticules hybrides de TiO₂*”. **Afef Mehri**, Hafedh Kochkar, Stéphane Daniele, Violaine Mendez, Gilles Berhault et Abdelhamid Ghorbel Presented at the 40^{ème} réunion GECat-DivCat 2008 **du 26-30 mai 2008, Yasmine Hammamet, Tunisie**



- 8) “*Etude cinétique de l’isotherme d’adsorption de Pd sur des Hydrogénotitanates $H_{1,63}Na_{0,37}Ti_2O_5.H_2O$* ”. **Hafedh Kochkar**, Asma Turki, Latifa Bergaoui, Gilles Berhault et Abdelhamid Ghorbel. Presented at the 40^{ème} réunion GECat-DivCat 2008 **du 26-30 mai 2008, Yasmine Hammamet, Tunisie.**
- 9) “*Preparation and Catalytic Activity of Nanostructured Pd/titanate Nanotubes*”. **Khaled Jabou**, Hafedh Kochkar, Gilles Berhault. Presented at the 6^{ème} International Mesostructured Materials Symposium (IMMS 2008), **8-11 September 2008, Namur, Belgique.**
- 10) “*Preparation and Catalytic Activity of Isotropic Pd on Titanate in The Hydrogenation of Cinnamaldehyde*”. **Khaled Jabou**, Hafedh Kochkar, Gilles Berhault Berhault et Abdelhamid Ghorbel. Presented at the 6^{ème} International Mesostructured Materials Symposium (IMMS 2008), **8-11 September 2008, Namur, Belgique.**
- 11) “*Optimization of the Alkaline Hydrothermal Route to Titanate Nanotubes by a Doehlert Matrix Experience Design*”. **Hafedh Kochkar**, Nesrine. Lakhdhar, Gilles Berhault, Maria Bausach, Abdelhamid Ghorbel. Communication par affiche présentée à la 6^{ème} International Mesostructured Materials Symposium (IMMS 2008), **8-11 September 2008, Namur, Belgique.**
- 12) “*Influence of TiO_2 Morphology on the Activity of Ruthenium Catalysts for WAO of p-hydroxybenzoic acid*”. **Mohamed Triki**, Hafedh Kochkar, Gilles Berhault, Abdelhamid. Ghorbel. Communication par affiche présentée à la 6^{ème} International Mesostructured Materials Symposium (IMMS 2008), **8-11 September 2008, Namur, Belgique.**
- 13) “ *TiO_2 nanotubes promoting Pt/C catalysts for methanol electro-oxidation in acidic media*”. **Bochra Abida**, Lotfi Chirchi, Hafedh Kochkar et Abdelhamid. Ghorbel. Presented at the 2nd international conference on the Electrochemical Promotion Of Catalysis and its Applications. Oléron Island, **France September 29th–October 3rd 2008.**
- 14) “*Préparation d’électrode Pt/ TiO_2 nanotubes/C pour la réaction d’électro oxydation du méthanol dans une pile DMFC*”. **Bochra Abida**, Lotfi Chirchi, Hafedh Kochkar et Abdelhamid. Ghorbel. Presented at the **JNC 15- Yasmine Hammamet, 21-24 Décembre 2008.**
- 15) “*New alternative to silver MTPs and palladium Nano-Urchins like structure using α -cyclodextrin as structuring agent*”. **Hafedh Kochkar**, Gilles Berhault, Abdelhamid Ghorbel. Presented at the **2èmes**



Journées Nanosciences et Nanotechnologie- 11 au 13 July 2009, GAMMARTH-Tunis organisées par le conseil consultatif de la recherche.

- 16) *'Optimization of the Alkaline Hydrothermal Route to Titanate Nanotubes by a Doehlert Matrix Experience Design-Effect of post treatment'*. **Hafedh Kochkar**, Mongia Zina Said, Abdelhamid Ghorbel. Presented at the **2èmes Journées Nanosciences et Nanotechnologie- 11 au 13 Juillet 2009, GAMMARTH-Tunis organisées par le conseil consultatif de la recherche.**
- 17) *'New alternative to silver MTPs and palladium Nano-Urchins like structure using β -cyclodextrin as structuring agent'*. **Hafedh Kochkar**, Gilles Berhault, Mimoun Aouine et Abdelhamid Ghorbel. Presented at the **EuropaCat IX, Catalysis for a Sustainable World, August 30 - September 4, 2009, Salamanca, Spain.**
- 18) *'One-pot deposition of palladium on hybrid TiO₂ nanoparticles: Application in a reaction of hydrogenation of cinnamaldehyde'*. **Afef Mehri**, Hafedh Kochkar, Stephane Daniele, Violaine Mendez, Gilles Berhault, Abdelhamid Ghorbel. Presented at the **3rd International Symposium, Advanced micro- and mesoporous materials, September 6-9, 2009. Albena resort, Bulgaria.**
- 19) *'Catalytic Activity of Nanostructured Pd Catalysts supported on Hydrogenotitanate Nanotubes'*. **Hafedh Kochkar**, Khaled Jabou, Gilles Berhault, Abdelhamid Ghorbel. Presented at the **10^{ème} Symposium International "Scientific Bases for the Preparation of Heterogeneous Catalysts", du 11 au 15 July 2010, Louvain-la-Neuve, Belgique.**
- 20) *'One-Pot Deposition of Palladium on Hybrid TiO₂ Nanoparticles: Application for the Hydrogenation of Cinnamaldehyde'*. **Afef Mehri**, Hafedh Kochkar, Stéphane Daniele, Violaine Mendez, Gilles Berhault, Abdelhamid Ghorbel. Presented to the **10^{ème} Symposium International "Scientific Bases for the Preparation of Heterogeneous Catalysts", du 11 au 15 July 2010, Louvain-la-Neuve, Belgique.**
- 21) *'p-hydroxybenzoic acid degradation by Fe/Pd-HNTs catalyst with in situ generated hydrogen peroxide'*. **Asma Turki**, Hafedh Kochkar, Gilles Berhault et Abdelhamid Ghorbel. Presented to the **10^{ème} Symposium International "Scientific Bases for the Preparation of Heterogeneous Catalysts", du 11 au 15 July 2010, Louvain-la-Neuve, Belgique.**



- 22) *"Shape-Controlled Synthesis of Silver and Palladium nanocrystals using α -cyclodextrin-Application in the Hydrogenation of Cinnamaldehyde"*. Hafedh Kochkar, Abdelhamid Ghorbel, **Gilles Berhault**. Presented to the **North American Catalysis Society 22nd North American Meeting June 5-10th, 2011 Detroit Marriott at the Renaissance Center Detroit, Michigan, USA.**
- 23) *"Elaboration of TiO₂ Nanoparticles Prepared By Sol-gel Method With Soluble Starch Stabilization and Biological Extraction"*. **Hafedh Kochkar**, Afef Mehri and Abdelhamid Ghorbel". Presented to the **The international symposium NANOPOROUS MATERIALS - VI held in Alberta, Canada, August 21-24th, 2011**
- 24) *"Hydrothermal Elaboration of Titanate Nanotubes, Nanowires and Nanorods and their Photocatalytic Properties Evaluation"*, **A. Turki**, H. Kochkar, G. Berhault, C. Guillard et A. Ghorbel. Presented to the 7^{ème} édition du "International Conference on Environmental Catalysis" (ICEC 2012), **du 2 -6th September 2012, Lyon, France.**
- 25) *"Preparation and Characterization of V₂O₅/TiO₂ Nanotubes Catalysts for Chlorobenzene Oxidation"*, **C. Gannoun**, A. Turki, R. Delaigle, P. Eloy, H. Kochkar, A. Ghorbel, E.M. Gaigneaux. Presented to the 7^{ème} édition du "International Conference on Environmental Catalysis" (ICEC 2012), **du 2 -6 September 2012, Lyon, France.**
- 26) *"Photocatalytic Efficiency of TiO₂ Nanotubes, Nanowires and Nanorods in Water and Air Treatment"*, **C. Guillard**, A. Turki, F. Dappozze, H. Kochkar, G. Berhault et A. Ghorbel. Presented to the "TiO₂-Based Materials : Synthesis, Modification and Supports" à la 17^{ème} édition du congrès "Semiconductor Photocatalysis and Solar Energy Conversion" (SPASEC-17), **du 11-15 November 2012, Jacksonville, Floride, USA.**
- 27) *"Penicillin G Adsorption Isotherms and Kinetic Studies using TiO₂ Nanotubes free and modified with β -Cyclodextrin"*, M. Meksi, Z. Ksibi, H. Kochkar. Presented to the 13th International Symposium on Environment, Catalysis and Process Engineering, **du 23 - 25 November 2015, Hammamet, Tunisie.**
- 28) *"Design of new fullerene-TiO₂ nanocomposite: effect of heat-treatment on photocatalytic efficiency"*, M. Hamandi, G. Berhault, C. Guillard, Z. Ksibi, H. Kochkar. Presented to the 13th International Symposium on Environment, Catalysis and Process Engineering, **du 23 -25 November 2015, Hammamet, Tunisie.**



- 29) “*Design of new fullerene-TiO₂ nanocomposite: effect of heat-treatment on photocatalytic efficiency*”, M.Hamandi, G. Berhault, C.Guillard, Z. Ksibi, H. Kochkar. Presented to the **13th International Symposium on Environment, Catalysis and Process Engineering, du 23 -25 November 2015, Hammamet, Tunisie.**
- 30) ‘*Physicochemical characterization of TiO₂ nanotubes/graphene oxide nanocomposite*’. M.Hamandi, M. Triki, N.Abdullah Alomair and H.Kochkar, ‘NanoMAT2019 – 2nd International Conference on Nanomaterials and Their Applications, **April 27-29th, 2019, Hammamet, Tunisia. .Poster communication.**

PROJECTS IAU

-Projects 2019 (02)	
2019-087 Sci	Design of nanomaterials for Water Treatment at Low Energy Cost-conception of photocatalytic reactor equipped with smart glass (PI)
2019-036 Sci	CO ₂ capture and storage using nanoporous carbon nitride molecular baskets - To combat greenhouse effect (PI)
Projects 2020 (04)	
2020-100-BASRC	Assisted Photocatalysis by Ferroelectric Polarization for Fine Chemicals Production (PI)
2020-084-BASRC	Design of nanomaterials for fine chemicals production by depolymerization of solid wastes derived lignin (co-PI)
2020-002-BASRC	Immobilization of Keratinase on Nanohybrid materials for improving its activity and stability for industrial application (co-PI)
2020-079-Pharm	Catalytic decomposition of pharmaceuticals in wastewater using novel cost-effective and highly-efficient transition metal catalysts (co-PI)