

Curriculum Vitæ

1. PERSONAL DATA

Full Name: Helder Teixeira Gomes

Place and Date of Birth: Osnabrück, Germany, 2nd of February 1974

Nationality: Portuguese

Address: Polytechnic Institute of Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

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2. ACADEMIC DEGREES

- PhD in Chemical Engineering, Faculty of Engineering of Porto University, June 2002.
- BSc in Chemical Engineering, Faculty of Engineering of Porto University, July 1997, with a classification of 16/20.

3. PREVIOUS AND CURRENT SCIENTIFIC AND/OR PROFESSIONAL ACTIVITIES

- Coordinator Professor at the Department of Chemical and Biological Technology, School of Technology and Management, Polytechnique Institute of Bragança, since February 2019.
- Topic Coordinator of Laboratory “Products and Processes Engineering” of the Mountain Research Centre (CIMO), since January 2018
- Vice-President of the Iberoamerican Federation of Catalysis Societies (FISoCat), since September 2018
- Vice-President of the Catalysis and Porous Materials of the Portuguese Chemical Society, since September 2018
- President of the Catalysis and Porous Materials of the Portuguese Chemical Society, between May 2016 and September 2018
- Integrated Researcher Member of the Mountain Research Centre (CIMO), since January 2018.
- Integrated Researcher Member of the Associate Laboratory LSRE-LCM, November 1997-December 2019.

- Adjunct Professor at the Department of Chemical and Biological Technology, School of Technology and Management, Polytechnique Institute of Bragança, November 2008-January 2019.
- Assistant Professor at the Department of Chemical and Biological Technology, School of Technology and Management, Polytechnique Institute of Bragança, November 2001-November 2008.
- Researcher at the Department of Research and Development of Fábrica de Tintas 2000, Lda, Industry from the Sector of Paints and Varnishes, July-November 1997.

4. MAIN RESEARCH INTERESTS

Development and characterization of materials, adsorbents and heterogeneous catalysts for application in biomedical, environmental, fine chemistry and energy-related fields. Valorization of wastes and other resources into high-added value products. Development of treatment technologies in liquid-phase based on advanced oxidation processes.

5. PROJECTS, NETWORKS AND RESEARCH CONTRACTS

Summary: 8 projects and networks as principal investigator (5 as project coordinator, 3 as principal investigator at the Polytechnique Institute of Bragança), 30 projects, networks and research contracts as member (19 national, 11 international).

Selected Projects, Networks and Research Contracts

- Project Title: PLASTIC_TO_FUEL&MAT - Upcycling Waste Plastics into Fuel and Carbon Nanomaterials
Reference: POCI-01-0145-FEDER-031439)
Funding Institutions: FEDER/Portuguese Science and Technology Foundation (FCT)
Program: Research & Technology Development Scientific Projects
Execution Period: 01/06/2018-31/05/2022
Role: Project Coordinator
- Project Title: GreenShoes 4.0 - Footwear, Leather Goods, Advanced Materials, Equipment and Software Technology
Reference: POCI-01-0247-FEDER-046082
Funding Institutions: POCI-FEDER/FCT
Execution Period: 30/06/2020-30/06/2023
Role: Team Member

- Project Title: VALORCOMP – Valorization of compost and other residues resulting from the organic fraction of municipal solid waste
Reference: 0119_VALORCOMP_2_P
Funding Institution: FEDER
Program: INTERREG V-A Spain – Portugal (POCTEP) 2014-2020
Execution Period: 01/10/2015-31/12/2020
Role: Project Coordinator
- Project Title: SHOE@FUTURE – Technology Solutions for Professional Footwear
Reference: POCI-01-0247-FEDER-033835
Funding Institution: Portuguese National Agency of Innovation (ANI)
Execution Period: 16/07/2018-15/07/2021
Role: Team Member
- Project Title: BacchusTech - Integrated Approach for the Valorisation of Winemaking Residues
Reference: POCI-01-0247-FEDER-069583
Funding Institution: Portuguese National Agency of Innovation (ANI)
Execution Period: 01/01/2021-30/06/2023
Role: Team Member
- Project Title: BagaÇo+Valor - Clean technology for the enhancement of olive pomace by-product nthe olive oil extracting industry
Reference: NORTE-01-0247-FEDER-072124
Funding Institution: Portuguese National Agency of Innovation (ANI)
Execution Period: 01/01/2021-30/06/2023
Role: Team Member
- Project Title: Unidade de Produção de Eletricidade em Pequena Escala Através da Gaseificação da Biomassa
Reference: PCIF/GVB/0197/2017
Funding Institution: Portuguese Science and Technology Foundation (FCT)
Program: R&D Projects in the framework of Prevent and Fight Forest Fires
Execution Period: 01/03/2019-28/02/2022
Role: Team Member
- Project Title: RTChip4Theranostics - Real time Liver-on-a-chip platform with integrated micro(bio)sensors for preclinical validation of graphene-based magnetic nanocarriers

towards cancer theranostics

Reference: PTDC/EMD-EMD/29394/2017

Funding Institutions: Northern Regional Operational Program/FEDER/Portuguese Science and Technology Foundation (FCT)

Program: Research & Technology Development Scientific Projects

Execution Period: 01/07/2018-30/06/2021

Role: Project Coordinator at IPB

- Project Title: Development of novel porous carbons and carbide materials to be used in the separation of hexane isomers in gas phase and in the treatment of wastewater

Funding Institutions: FCT/DAAD

Programme: Programme for Cooperation in Science between Portugal and Germany (2019-2020)

Execution Period: 01/03/2019-31/12/2021

Role: Project Coordinator at IPB

- Project Title: ExtraLightSafeShoe – Development of polymeric solutions for technical footwear

Reference: POCI-01-0247-FEDER-017570)

Funding Institution: Portuguese National Agency of Innovation (ANI)

Execution Period: 01/10/2016-02/04/2019 (30 meses)

Role: Team Member

- Project Title: Catalysis and materials

Reference: NORTE-07-0124-FEDER-000015

Funding Institution: FEDER/Portuguese Science and Technology Foundation (FCT)

Program: Programa Operacional do Norte

Execution Period: 01/01/2013-30/06/2015

Role: Principal Investigator at Polytechnique Institute of Bragança

6. PUBLICATIONS

Summary: 4 book chapters, 75 papers in international journals, 4 papers in national journals, 44 papers in conference proceedings, 14 invited lectures, 89 oral communications and 109 poster communications

ORCID: <http://orcid.org/0000-0001-6898-2408>; **H Index:** 28; **Citations:** 2211

Selected Papers in international journals (ISI Indexed; IF≡Impact Factor)

- Diaz de Tuesta J.L., Saviotti M.C., Roman F.F., Pantuzza G.F., Sartori H.J.F., Shinibekova A., Kalmakhanova M.S., Massalimova B.K., Pietrobelli J.M.T.A., Lenzi G.G., Arrobas M., Gomes H.T., Assisted hydrothermal carbonization of agroindustrial byproducts as effective step in the production of activated carbon catalysts for wet peroxide oxidation of micro-pollutants, *Journal of Environmental Chemical Engineering* 9 p. 105004 (2021), DOI: 10.1016/j.jece.2020.105004
- Huacalco-Aguilar Y., Diaz de Tuesta J.L., Álvarez-Torrellas S., Gomes H.T., Larriba M., Ovejero G., García J., New insights on the removal of diclofenac and ibuprofen by CWPO using a magnetite-based catalyst in an up-flow fixed-bed reactor, *Journal of Environmental Management* 281 p. 111913 (2021), DOI: 10.1016/j.jenvman.2020.111913
- Roman F.F., Diaz de Tuesta J.L., Praça P., Silva A.M.T., Faria J.L., Gomes H.T., Hydrochars from compost derived from municipal solid waste: production process optimization and catalytic applications, *Journal of Environmental Chemical Engineering* 9 p. 104888 (2021), DOI: 10.1016/j.jece.2020.104888
- Pinho M.T., Ribeiro R.S., Gomes H.T., Faria J.L., Silva A.M.T., Screening of activated carbons for the treatment of highly concentrated phenol solutions using catalytic wet peroxide oxidation: the effect of iron impurities on the catalytic activity, *Catalysts* 10 p. 1318 (2020), DOI: 10.3390/catal10111318
- Diaz de Tuesta J.L., Pantuzza G.F., Silva A.M.T., Praça P., Faria J.L., Gomes H.T., Catalysts prepared with matured compost derived from a municipal solid waste obtained in mechanical-biological treatment plants: Wet peroxide oxidation of pollutants with different lipophilicity, *Catalysts* 10 p. 1243 (2020), DOI: 10.3390/catal10111243
- Diaz de Tuesta J.L., Quintanilla A., Casas J.A., Morales-Torres S., Faria J.L., Silva A.M.T., Gomes H.T., The pH effect on the kinetics of 4-nitrophenol removal by CWPO with doped carbon black catalysts, *Catalysis Today* 356 p. 205-215 (2020), DOI: 10.1016/j.cattod.2019.08.033 (IF = 4.888)
- Diaz de Tuesta J.L., Silva A.M.T., Faria J.L., Gomes H.T., Adsorption of Sudan-IV contained in oily wastewater on lipophilic activated carbons: kinetic and isotherm modelling, *Environmental Science and Pollution Research* 27 p. 20770-20785 (2020), DOI: 10.1007/s11356-020-08473-1 (IF = 2.914)
- Kalmakhanova M.S., Diaz de Tuesta J.L., Massalimova B.K., Gomes H.T., Pillared clays from natural resources as catalysts for catalytic wet peroxide oxidation: Characterization

- and Kinetic Insights, *Environmental Engineering Research* **25** p. 186-196 (2020) DOI: 10.4491/eer.2018.402 (IF = 1.087)
- Ribeiro R.S., Frontistis Z., Mantzavinos D., Silva A.M.T., Faria J.L., Gomes H.T., Screening of heterogeneous catalysts for the activated persulfate oxidation of sulfamethoxazole in aqueous matrices. Does the matrix affect the selection of catalyst?, *Journal of Chemical Technology and Biotechnology* **94** p. 2425-2432 (2019), DOI: 10.1002/jctb.6080 (IF = 2.659)
 - Martin-Martinez M., Machado B.F., Serp P., Morales-Torres S., Silva A.M.T., Figueiredo J.L., Faria J.L., Gomes H.T., Carbon nanotubes as catalysts for wet peroxide oxidation: The effect of surface chemistry, *Catalysis Today* **357** p. 332-340 (2020), DOI: 10.1016/j.cattod.2019.03.014 (IF = 4.888)
 - Silva A.S., Kalmakhanova M.S., Massalimova B.K., Diaz de Tuesta J.L.*, Gomes H.T.*, Wet peroxide oxidation of paracetamol using acid activated and Fe/Co pillared clay catalysts prepared from natural clays, *Catalysts* **9**, 705, p. 1-16 (2019)
 - Ribeiro R.S., Gallo J., Bañobre-López M., Silva A.M.T., Faria J.L., Gomes H.T., Enhanced performance of cobalt ferrite encapsulated in graphitic shell by means of AC magnetically activated catalytic wet peroxide oxidation of 4-nitrophenol, *Chemical Engineering Journal* **376**, 12012 (2019). DOI: 10.1016/j.cej.2018.09.173 (IF = 8.355)
 - Kalmakhanova M.S., Massalimova B.K., Gomes H.T., Diaz de Tuesta J.L., Tsoy I.G., Aidarova A.O., Obtaining of zirconium catalysts based on pillared clays for peroxide oxidation of 4-nitrophenol, *News of the National Academy of Sciences of the Republic of Kazakhstan, Series Chemistry and Technology* **4** p. 14-21 (2018)
 - Rodrigues R.O., Baldi G., Doumet S., Garcia-Hervia L., Gallo J., Bañobre-López M., Dražić G., Calhela R.C., Ferreira I.C.F.R., Lima R., Gomes H.T., Silva A.M.T., Multifunctional graphene-based magnetic nanocarriers for combined magnetic hyperthermia and dual stimuli-responsive drug delivery, *Materials Science & Engineering C* **93** p. 206-217 (2018). DOI: 10.1016/j.msec.2018.07.060 (IF = 5.080)
 - Karimi M., Silva J.A.C., Gonçalves C., Diaz de Tuesta J.L., Rodrigues A.E., Gomes H.T., CO₂ Capture in chemically and thermally modified activated carbons using breakthrough measurements: experimental and modeling study, *Industrial & Engineering Chemistry Research* **57** p. 11154–11166 (2018). DOI: 10.1021/acs.iecr.8b00953 (IF = 2.843)
 - Martin-Martinez M., Álvarez-Torrellas S., García J., Silva A.M.T., Faria J.L., Gomes H.T., Exploring the activity of chemical-activated carbons synthesized from peach stones as

- metal-free catalysts for wet peroxide oxidation, *Catalysis Today* **313** p. 20-25 (2018). DOI: 10.1016/j.cattod.2018.01.003 (IF = 4.636)
- Methenitia M.E., Frontistis Z., Ribeiro R.S., Silva A.M.T., Faria J.L., Gomes H.T., Mantzavinos D., Degradation of propyl paraben by activated persulfate using iron-containing magnetic carbon xerogels: Investigation of water matrix and process synergy effects, *Environmental Science and Pollution Research* **25** p. 34801-34810 (2018). DOI: 10.1007/s11356-017-0178-9 (IF = 2.741)
 - Kalmakhanova M.S.* , Massalimova B.K., Diaz de Tuesta J.L., Gomes H.T., Nurlibaeva A., Novelty pillared clays for the removal of 4-nitrophenol by catalytic wet peroxide oxidation, *News of the National Academy of Sciences of the Republic of Kazakhstan, Series of Geology and Technical Sciences* **3** p. 12-19 (2018)
 - Ribeiro R.S., Silva A.M.T., Figueiredo J.L., Faria J.L., Gomes H.T., The role of cobalt in bimetallic iron-cobalt magnetic carbon xerogels developed for catalytic wet peroxide oxidation, *Catalysis Today* **296C** p.66-75 (2017). DOI: 10.1016/j.cattod.2017.06.023 (IF = 4.636)
 - Ribeiro R.S., Rodrigues R.O., Silva A.M.T., Tavares P.B., Carvalho A.M.C., Figueiredo J.L., Faria J.L., Gomes H.T., Hybrid magnetic graphitic nanocomposites towards catalytic wet peroxide oxidation of the liquid effluent from a mechanical biological treatment plant for municipal solid waste, *Applied Catalysis B: Environmental* **219C** p. 645-657 (2017). DOI: 10.1016/j.apcatb.2017.08.013 (IF = 9.446)
 - Martin-Martinez M., Barreiro M.F.F., Silva A.M.T., Figueiredo J.L., Faria J.L., Gomes H.T., Lignin-based activated carbons as metal-free catalysts for the oxidative degradation of 4-nitrophenol in aqueous solution, *Applied Catalysis B: Environmental* **219C** p. 372-378 (2017). DOI: 10.1016/j.apcatb.2017.07.065 (IF = 9.446)
 - Outsiou A., Frontistis Z., Ribeiro R.S., Antonopoulou M., Konstantinou I.K., Silva A.M.T., Faria J.L., Gomes H.T., Mantzavinos D., Activation of sodium persulfate by magnetic carbon xerogels (CX/CoFe) for the oxidation of bisphenol A: Process variables effects, matrix effects and reaction pathways, *Water Research* **124** p. 97-107 (2017). DOI: 10.1016/j.watres.2017.07.046 (IF = 6.942)
 - Álvarez-Torrellas S., Martin-Martinez M., Gomes H.T., Ovejero G., García J., Enhancement of p-nitrophenol adsorption capacity through N₂-thermal-based treatment of activated carbons, *Applied Surface Science* **414**, p. 424-434 (2017). DOI: 10.1016/j.apsusc.2017.04.054 (IF = 3.387)

- Ribeiro R.S., Silva A.M.T., Tavares P.B., Figueiredo J.L., Faria J.L., Gomes H.T., Hybrid magnetic graphitic nanocomposites for catalytic wet peroxide oxidation applications, *Catalysis Today* **280P1**, p. 184-191 (2017). DOI: 10.1016/j.cattod.2016.04.040 (IF = 4.636)
- Rodrigues R.O., Bañobre-López M., Gallo J., Tavares P.B., Silva A.M.T., Lima R., Gomes H.T., Haemocompatibility of iron oxide nanoparticles synthesized for theranostic applications: a high-sensitivity microfluidic tool, *Journal of Nanoparticle Research*, **18:194** (2016). DOI: 10.1007/s11051-016-3498-7 (IF = 1.88)
- Ribeiro R.S., Frontistis Z., Mantzavinos D., Venieri D., Antonopoulou M., Konstantinou I.K., Silva A.M.T., Faria J.L., Gomes H.T., Magnetic carbon xerogels for the catalytic wet peroxide oxidation of sulfamethoxazole in environmentally relevant water matrices, *Applied Catalysis B: Environmental* **199**, p. 170-186 (2016). DOI: 10.1016/j.apcatb.2016.06.021 (IF = 6.007)
- Martin-Martinez M., Ribeiro R.S., Machado B.F., Serp P., Morales-Torres S., Silva A.M.T., Figueiredo J.L., Faria J.L., Gomes H.T., The role of nitrogen doping in the performance of carbon nanotube catalysts: a catalytic wet peroxide oxidation application, *ChemCatChem* **8**, p. 2068-2078 (2016). DOI: 10.1002/cctc.201600123 (IF = 5.181)
- Álvarez-Torrellas S., Ribeiro R.S., Gomes H.T., Ovejero G., García J., Removal of antibiotic compounds by adsorption using glycerol-based carbon materials, *Chemical Engineering Journal* **296**, p. 277-288 (2016). DOI: 10.1016/j.cej.2016.03.112 (IF = 4.058)
- Ribeiro R.S., Silva A.M.T., Figueiredo J.L., Faria J.L., Gomes H.T., Catalytic wet peroxide oxidation: a route towards the application of hybrid magnetic carbon nanocomposites for the degradation of organic pollutants. A review, *Applied Catalysis B: Environmental* **187**, p. 428-460 (2016). DOI: 10.1016/j.apcatb.2016.01.033 (IF = 6.007)
- Pinho M.T., Silva A.M.T., Fathy N.A., Attia A.A., Gomes H.T., Faria J.L., Activated carbon xerogel-chitosan composite materials for catalytic wet peroxide oxidation under intensified process conditions, *Journal of Environmental Chemical Engineering* **3**, 1243-1251 (2015). DOI: 10.1016/j.jece.2014.10.020 (SJR = 0.810)
- Ribeiro R.S., Silva A.M.T., Pastrana-Martínez L.M., Figueiredo J.L., Faria J.L., Gomes H.T., Graphene-based materials for the catalytic wet peroxide oxidation of highly concentrated 4-nitrophenol solutions, *Catalysis Today* **249**, p. 204-212 (2015). DOI: 10.1016/j.cattod.2014.10.004 (IF = 3.309)
- Álvarez S., Ribeiro R.S., Gomes H.T., Sotelo J.L., García J., Synthesis of Carbon Xerogels

and their Application in Adsorption Studies of Caffeine and Diclofenac as Emerging Contaminants, *Chemical Engineering Research and Design* **95**, p. 229-238 (2015). DOI: 10.1016/j.cherd.2014.11.001 (IF = 2.281)

- Pastrana-Martínez L.M., Pereira N., Lima R., Faria J.L., Gomesa H.T., Silva A.M.T., Degradation of diphenhydramine pharmaceutical by photo-Fenton using magnetically recoverable iron oxide nanoparticles as catalyst, *Chemical Engineering Journal* **261**, p. 45-52 (2015). DOI: 10.1016/j.cej.2014.04.117 (IF = 4.058)

7. PATENTS

Kalmakhanova M.S., Massalimova B.K., Gomes H.T., Diaz de Tuesta J.J., Nadyrov R.K., Mazhibayev A.K., Tsoy I.G., Method of producing a catalyst based on columnar clays for the oxidation of phenols in aqueous solution with hydrogen peroxide, Patent nº 3960 for Utility Model, Kazakhstan, 2019

8. OTHER SKILLS/ACTIVITIES

Supervised 6 Post-PhD, 8 PhD, 32 Master and 23 BSc students. Twenty two years of experience in teaching activities. Member of the scientific or organizing committee of several national and international meetings. Reviewer of 36 ISI-Indexed International Journals. Integrate the Editorial/Scientific Board of Catalysts, Egyptian Journal of Chemistry, QUÍMICA, Ingeniería (Costa Rica) and Egítania Scientia Journals. Guest-Editor of 4 Special Issues on Catalysis Today, on Catalysts and on the International Journal of Analytical Chemistry.