Parte A. PERSONAL DATA

Date CV	8/11/2021

Name and surname	Cristina Palet Ballús		
DNI/NIE/passport	39174241C	Age	53
Identification number	Researcher ID	G-3034-2015	
	Orcid code	orcid.org/0000-0002-7467-613X	

A.1. Actual profesional situation

Organism	Universitat Autònoma de Barcelona (UAB)			
Dpt./Centre	Departament de Química / Facultat de Ciències i Biociències			
Address	Campus Nord, Despatx C7-251.1			
Telephone	935813475	e-mail	cristina.palet@uab.cat	
Profesional category	Profesor Titular de Universidad		Fecha inicio	3-3-2000
cód. UNESCO	230100 – Analytical chemistry			
Keywords	Separation techniques, Speciation, Inorganic and organic contamination, Membranes, Biomass, Nanoparticles, Anaytical Instrumental Techniques (ICP-OES, ICP-MS, GC-MS, HPLC-ICP-MS, HPLC-UV, CZE, MW, SEM, TEM, AFM, ATR-FTIR, Synchrotron)			

A.2. Academic formation *(title, institution, date)*

Degree/Doctorate	University	Date
Degree on Chemistry	Universitat Autònoma de Barcelona	June 1989
PhD in Chemistry	Universitat Autònoma de Barcelona	December 1994

A.3. General quality indicators of scientific production

Sex year national research granted periods: 4, last granted [2011,2013,2015-2018] on June 23, 2019. In total, 10 theses directed, and 1 thesis under development, 50 Master and/or Degree Research projects supervised, 20 tutored baccalaureate research works. Publications in indexed international journals: 53 (plus 1 *submitted*, and 4 *in progress*); and 76 presentations to congresses, including international and national congresses. Publication data: 574 citations; Average number of citations: per article 13.67 and per year 19.79; 16 total publications in the first quartile (Q1) [Journal of Membrane Science, Desalination, Separation and Purification Technology, Chemical Engineering Journal, Polymer, Science of The Total Environment, Sensors & Actuators: B. Chemical, Textile Research Journal]. H index: 16.

CURRICULUM SUMMARY

Linked to the *Universitat Autònoma de Barcelona* since 1989, obtaining my Chemistry degree took her doctor's degree with *Cum Laude* with the Prof's tutorship Manuel Valiente and Prof. Maria Muñoz. Since March 2000, I am *Professor Titular* (Analytical Chemistry) at Chemistry Department of *Universitat Autònoma de Barcelona*. My research work focuses on two fact-finding lines, Basic and Applied research. In Basic research, Separation Systems have been developed, primary by using Membrane Set-ups in flat and hollow fiber configurations (liquid, polymeric and composite membranes) and Chromatographic materials (Resins). Furthermore, Characterization and use of bio-waste materials for separation purposes, so different Biomasses have been also studied, mainly for metals by now (human hair, dog hair, degreased wool and chicken feathers as keratin biomaterials from animal origin, and cork and algae as vegetal origin have been used). Nanoparticles (NPs) are prepared and characterized, mainly for their immobilization in different supports to improve the efficiency and/or the selectivity of heavy metal adsorption. One application of NPs (SPION) for the adsorption of PAHs has been also checked. In more applied field, the extraction, identification and quantification of PAHs by Gas Chromatography with Mass Detector has been developed. To follow all the Systems, different Instrumental Techniques have been used and some analytical procedures have been developed (ICP-OES, ICP-MS, HPLC-ICP-MS, GC-MS, HPLC-UV, CZE, MW, SEM, TEM, AFM, ATR-FTIR, Process Automation, Continuous analysis Systems, Sample pretreatment and sample introduction in analytical spectroscopy techniques). Some Design of Experiments Systems have been applied to optimize different designed separation methodologies. Beamline time got this 2018, in ALBA (Catalunya, Spain) and Diamond (England) Synchrotrons to determine the speciation of chromium onto different biomass systems, for the first time.

PUBLICATIONS

- Daiana Simón, Sebastián Gass, Cristina Palet, Adrián Cristóbal, Disposal of wooden wastes used as heavy metal adsorbents as components of building bricks, Journal of Building Engineering (2021). DOI: 10.1016/j.jobe.2021.102371
- Natalia Inchaurrondo, Carla di Luca, Patricia Haure, Gregor Žerjav, Albin Pintar, Cristina Palet, Evaluation of low-cost geo-adsorbents for As(V) removal, Environmental Technology & Innovation, (2021). DOI: 10.1016/j.eti.2020.101341
- Jingjing Zhao, Roberto Boada, Giannantonio Cibin, Cristina Palet, Enhancement of selective adsorption of Cr species via modification of pine biomass, STOTEN, (2021), 756, 143816. DOI: 10.1016/j.scitotenv.2020.143816
- Eduard Villagrasa, Cristina Palet, Diana Gutiérrez, Irene López-Gómez, Isabel Esteve, Alejandro Sánchez-Chardi and Antonio Solé, Cellular strategies against metals exposure and metal localization patterns linked to phosphorus metabolic pathways in *Ochrobactrum anthropi* DE2010, Journal of Hazardaous Materials, (2021), 402,123808. DOI: 10.1016/j.jhazmat.2020.123808
- Helan Zhang, Fernando Carrillo-Navarrete, and Cristina Palet, Human hair biogenic fiber as a biosorbent of multiple heavy metals from aqueous solutions, Journal of Natural Fibers, (2020). DOI: 10.1080/15440478.2020.1798841
- Raquel Montes, Gerard Sánchez, Jingjing Zhao, Cristina Palet, Mireia Baeza and Julio Bastos-Arrieta, Customized In Situ Functionalization of Nanodiamonds with Nanoparticles for Composite Carbon-Paste Electrodes, Nanomaterials (2020), 10(6), 1179. DOI:10.3390/nano10061179
- Helan Zhang, Fernando Carrillo-Navarrete, Montserrat López-Mesas and Cristina Palet, Use of Chemically Treated Human Hair Wastes for the Removal of Heavy Metal Ions from Water, Water, (2020), 12, 1263. DOI:10.3390/w12051263
- JingJing Zhao, Xin-Jie Shen, Xavier-Domene, Josep-Maria Alcañiz, Xing Liao, Cristina Palet, Comparison of biochars derived from different types of feedstock and their potential for heavy metal removal in multiple-metal solutions, Scientific Reports 9(1):9869 (2019). DOI: 10.1038/s41598-019-46234-4
- Inchaurrondo N, di Luca C, Mori F, Pintar A, ˇ Zerjav G, Valiente M, Palet C., Synthesis and adsorption behavior of mesoporous alumina and Fe-doped alumina for the removal of dominant arsenic species in contaminated waters, *Journal of Environmental Chemical Engineering*, (2019). DOI: 10.1016/j.jece.2019.102901
- J.M. Muñoz, R. Montes, J. Bastos-Arrieta, M. Guardingo, F. Busqué, D. Ruíz-Molina, C. Palet, J. García-Orellana, M. Baeza, Carbon nanotube-based nanocomposite sensor tuned with a catechol as novel electrochemical recognition platform of uranyl ion in aqueous samples, *Sensors & Actuators: B. Chemical*, (2018). DOI: 10.1016/j.snb.2018.07.093
- H. Zhang, F. Carrillo, M. López-Mesas and C.Palet; Valorization of keratin biofibers for removing heavy metals from aqueous solutions, *Textile Research Journal*, 2018. DOI: 10.1177/0040517518764008
- O. Baltrons, M.López-Mesas, M. Vilaseca, C. Gutiérrez-Bouzán, F. Le Derf, F. Portet-Koltalo, C. Palet; Influence of a mixture of metals on PAHs biodegradation processes in soils, *Science of the Total Environment*, (2018), 628–629, 150–158. DOI: 10.1016/j.scitotenv.2018.02.013
- O. Baltrons, M. López-Mesas, C.Palet, F. Le Derf, and F. Portet-Koltalo; Molecularly imprinted polymer-liquid chromatography/fluorescence for the selective clean-up of hydroxylated polycyclic aromatic hydrocarbons in soils, *Analytical Methods*, (2013), 5(22), 6297-6305. DOI: 10.1039/c3ay41227j
- A. Candela, V. Benatti and C. Palet; Pre-concentration of Uranium (VI) using bulk liquid and supported liquid membrane systems optimized containing bis(2-ethylhexyl) phosphoric acid as carrier in low concentrations, *Separation and Purification Technology*, (2013), 120, 172-179. DOI: 10.1016/j.seppur.2013.09.047
- A. Candela, J. Coello and C. Palet; Doehlert experimental design as a tool to study liquid-liquid systems for the recovery of Uranium (VI) traces, *Separation and Purification Technology*, (2013), 118, 399-405. DOI: 10.1016/j.seppur.2013.07.017
- A.M. Candela, J. Coello, P. Masqué and C. Palet; Design optimization of membrane Doehlert Uranium for the preconcentration and determination by ICP-MS, *Procedia Engineering* (Euromembrane 2012), (2012), 44, 1227-1229. DOI:10.1016/j.proeng.2012.08.735
- M. López-Mesas, E. Navarrete, F. Carrillo and C. Palet; Bioseparation of Pb(II) and Cd(II) from aqueous solution using cork waste biomass. Modeling and optimization of the parameters of the biosorption step, *Chemical Engineering Journal*, (2011), 174, 9-17. DOI: 10.1016/j.cej.2011.07.026
- M. Resina, J. Macanàs, C. Fontàs, C. Palet and M. Muñoz; A comparative study of the selective transport of Zn/Cd and Pt/Pd couples with activated composite membranes and hybrid membranes, *Desalination*, (2009), 240, 316-326. 3rd Membrane Science and Technology Conference of Visegrad Countries (PERMEA 2007). DOI: 10.1016/j.desal.2007.11.079
- M. Resina, C. Fontàs, C. Palet and M. Muñoz; Comparative study of hybrid and activated composite membranes containing Aliquat 336 for the transport of Pt(IV), *Journal of Membrane Science*, (2008), 311(1-2), 235-242. DOI: 10.1016/j.memsci.2007.12.018

- A. Conesa, T. Gumí, J. Coello and C. Palet; Near infrared spectroscopy: A novel technique for classifying and characterizing polysulfone membranes, *Journal of Membrane Science*, (2007), 300, 122-130. DOI: 10.1016/j.memsci.2007.05.020
- A. Cano and C. Palet; Xylooligosaccharide recovery from agricultural biomass waste treatment with enzymatic polymeric membranes and characterization of products with MALDI-TOF-MS, *Journal of Membrane Science*, (2007), 291, 96-105. DOI: 10.1016/j.memsci.2006.12.048
- A. Conesa, T. Gumí and C. Palet; Membrane thickness and preparation temperature as key parameters for controlling the macrovoid structure of chiral activated membranes (CAM), *Journal of Membrane Science*, (2007), 287, 29-40. DOI: 10.1016/j.memsci.2006.10.006
- M. Resina; C. Fontas; C. Palet; M. Munoz, Selective transport of platinum(IV) and palladium(II) through hybrid and activated composite membranes containing Aliquat 336, *Desalination*, (2006), 200(1-3), 100-102. Conference of the European-Membrane-Society (EUROMEMBRANE 2006). DOI: 10.1016/j.desal.2006.03.257
- A. Conesa and C. Palet, Molecularly imprinted membranes (MIM) for the enantioseparation of selenoaminoacid compounds, *Desalination*, (2006), 200(1-3), 110-111. Conference of the European-Membrane-Society (EUROMEMBRANE 2006). DOI: 10.1016/j.desal.2006.03.261
- A. Cano, E.A. Moschou, S.K. Deo, S. Daunert, J. Coello and C. Palet; Optimization of the xylan degradation activity of monolithic enzymatic membranes as a function of their composition using design of experiments (DOE), *Bioprocess and Biosystems Engineering*, (2006), 29, 261-268. DOI: 10.1007/s00449-006-0075-y
- A. Cano, C. Minguillón and C. Palet; Immobilization of endo-1,4-β-xylanase in polysulfone acrylate membranes: synthesis and characterization, *Journal of Membrane Science*, (2006), 280, 383-388. DOI: 10.1016/j.memsci.2006.01.041

RESEARCH PROJECTS FINANCED

- PROJECT TITLE: “Vias de introducción de solutos en lagunas costeras: mecanismos ignorados de degradación de los ecosistemas (OPAL)”; FINANCER: Ministerio de Educación y Ciencia. Proyecto: PID2019-110311RB-C21; TIMING 2020-2023; 15 RESEARCHERS; IP: Jordi Garcia Orellana; UAB; Facultat de Ciències, Departament de Física.
- Biodiversa 2018, 2019
- PROJECT TITLE: "Research Group of Quality under the Research Planning of Catalonia"; FINANCER: CIRIT. Project: 2017 SGR 01543. TIMING 2017-2019; Project: 2014 SGR 1152. TIMING 2014-2016. Institution participant: Universitat Autònoma de Barcelona; Coordinator: Manuel Valiente Malmagro; Number of participating researchers: 17
- PROJECT TITLE: New Selenium-based Targeted Nanocapsules to treat Breast Cancer (NEOSETAC); CALL. H2020-MSCA-RISE-2017. FINANCER: Research Executive Agency, UE, Project number: 778325; TIMING: 2018-2021; Coordinator, UAB: Manuel Valiente.
- PROJECT TITLE: Removal and Recovery of Pharmaceutical Persistent Pollutants from Wastewater by Selective Reagentless Process (RECOPHARMA); CALL. H2020-MSCA-RISE-2017; FINANCER: Research Executive Agency, UE, Project number: 778266; TIMING: 2018-/2021; Coordinator, UAB PART: Manuel Valiente.
- PROJECT TITLE: “Especiacion Quimica: De Medio Ambiente A La Salud, Un Enfoque Nexus (CHEMNEXUS)”; FINANCER: Ministerio de Educación y Ciencia. Proyecto: CTM2015-65414-C2-1-R; TIMING 2016-2018; 9 RESEARCHERS; IP1: Manuel Valiente Malmagro; IP2: Montserrat López-Mesas; UAB; Facultat de Ciències, Departament de Química.
- PROJECT TITLE: “Uso De Biochar Para La Regulacion Del Ciclo Del Nitrogeno En El Suelo Y En Fertilizantes De Nueva Generacion“; FINANCER: Ministerio de Educación y Ciencia. Proyecto: AGL2015-70393-R; TIMING 2016-2018; 10 RESEARCHERS; IP1: Josep Maria Alcañiz Baldellou; Entidad solicitante: CREAF-UAB.
- PROJECT TITLE: “Advanced Multifunctional Nanostructured Materials Applied To Remove Arsenic In Argentinian Groundwater (NANOREMOVAS)”. CALL. H2020-MSCA-RISE-2014; FINANCER: Research Executive Agency, UE, Project number: GA645024; TIMING 2015-2018; 6 PARTNERS; Coordinator: UAB, Manuel Valiente.
- PROJECT TITLE: " Fortalecimiento de la cooperación científica y el intercambio de conocimiento en lo relativo al tratamiento de aguas contaminadas entre España y Brasil (FOREB2WATER)"; FINANCER: AGUA SOCIAL UE; TIMING 2014-2016; 3 PARTNERS; Coordinator, UAB: Montserrat López-Mesas.
- PROJECT TITLE: "Fostering Partnerships For The Implementation Of Best Available Technologies For Water Treatment & Management In The Mediterranean"; FINANCER: FP7-INCO-2013-9 - FP4WATIB – Ref number:609550; TIMING: 2013-2015; 13 PARTNERS; Coordinator UAB PART: Manuel Valiente Malmagro.
- PROJECT TITLE: " Observatoire de Recherche sur la Qualité de l’Environnement du Grand Sud-Ouest Européen "; FINANCER: ORQUE-SUDOE SOE3-P2-F591; TIMING: 2012-2014; 9 PARTNERS; Coordinator UAB PART: Manuel Valiente Malmagro.

- PROJECT TITLE: "Characterization And Sustainable Use Of Egyptian Degraded Soils"; FINANCER: FP7-INCO-2011-6 – SUDSOE (ERA-WIDE project) - Grant agreement no: 295031; TIMING: 2012-2014; 4 PARTNERS; Coordinator UAB PART: Manuel Valiente Malmagro.
- PROJECT TITLE: "Technological Evolution Of Chemical Speciation. Chemical And Synchrotron Technologies For The Characterization And Development Of Environmental Systems And Biomaterials (CHEMSYNCRO)"; FINANCER: Ministerio de Educación y Ciencia. Project Ref: CTM2012-30970; TIMING: 2013-2015; PARTICIPANTS: Universitat Autònoma de Barcelona; Coordinator: Manuel Valiente Malmagro; Number of participating researchers: 7
- PROJECT TITLE: "Development of Direct and Indirect Chemical Speciation Methodologies for an Efficient Characterization of Polluted Systems (Industrial Waters, Contaminated Soils and Monumental Patrimony); FINANCER: Ministerio de Educación y Ciencia. Project Ref.: CTQ2009-07432; TIMING: 2010-2012; PARTICIPANTS: Universitat Autònoma de Barcelona; Coordinator: Manuel Valiente Malmagro; Number of participating researchers: 7
- PROJECT TITLE: "Caracterización Eficiente De Suelos Contaminados. Desde El Screening Selectivo A La Biodisponibilidad De Metales"; FINANCER: Ministerio de Educación y Ciencia (20.000,00.- Euros). Project Ref.: CTQ2008-06633; TIMING: 2008-2009; PARTICIPANTS: Universitat Autònoma de Barcelona; **Coordinator: Cristina Palet Ballús;** Number of participating researchers: 5
- PROJECT TITLE: "Desarrollo de Procesos Químicos de Separación para la Caracterización y Remedio de Sistemas Contaminados"; FINANCER: Ministerio de Educación y Ciencia (60.000,00.- Euros). Project Ref.: CTQ2005-09430-C05-01; TIMING: 2005-2008; PARTICIPANTS: Universitat Autònoma de Barcelona, Universitat de Girona y Universitat Politécnica de Catalunya; **Coordinator: Cristina Palet Ballús (Coordinador del Proyecto);** Number of participating researchers: 7 (UAB)
- PROJECT TITLE: "Preparación y Caracterización de Membranas Poliméricas Enzimáticas para la Separación, Purificación y Recuperación Selectiva de Oligosacáridos de Hemicelulosa Enlazados a Lignina"; Entidad financiadora: 44.850,00.- Euros. CICYT. Proyecto: PPQ2002-04201-C02-01; Duración, desde:2002, hasta: 2005; Entidades participantes: Universitat Autònoma de Barcelona y Universitat Rovira i Virgili; **Investigador responsable: Cristina Palet Ballús;** Number of participating researchers: 12 (UAB i URV)

CONGRESSES PRESENTATIONS

76 communications in congresses with oral and poster presentations, in *Jornadas de Análisis instrumental* held in Barcelona (2011), PITTCON in Chicago (2002, 2003, 2004, 2005), Winter Conference on Plasma Spectrochemistry (2002), PERMEA (2003, 2005, 2007), ICOM 2002, Euromembrane (1999, 2004, 2006, 2009, 2012), CITEM (2005, 2010, 2014, 2016), EXPOQUIMIA (2008, 2011, 2014), Nano4water Workshop 2015, International Conference of Sustainable Cities for Water 2015, Nano&BioMed 2015, ICCBE 2015 and ICCE 2015, XXI Transfrontier Meeting Sensors and Biosensors 2016, ISMEC 2016, Excellence CRAG-UAB 2016, CWP-iWater 2016. In 2017, 3 international congresses and 1 national congress: XXXVI *Reunión Bienal de la RSEQ*, V *Reunión Nacional de Dioxinas*, *Furanos y Compuestos Orgánicos Persistentes Relacionados*, and VIII *Reunión de la Sociedad Española de Espectrometría de Masas*, 7th Colloids Conference, ICCE 2017, 10th Wold Congress in Chemical Engineering, 9th Franco-Spanish Workshop Bio-Inorganic Analytical Chemistry. In 2019 1 international congress with two oral presentations, in the International Conference on Chemistry and the Environment, ICCE 2019.

PARTICIPATION IN COMMITTEES AND AS JOURNAL REVIEWER

Organization and participation in the corresponding committees of different national and international conferences as well as related course-seminars (22). Participation in courts of research work and doctoral thesis (in total 28 times). Reviewer of several research projects (ANEP, Redemprendia), as well as several national and international journals (Affinity (IQS), Analytical and Bioanalytical Chemistry, Analytica Chimica Acta, Desalination, Desalination and Water Treatment, Engineering, Food and Bioproducts Processing, Hydrometallurgy , Journal of Biological Macromolecules, Industrial & Engineering Chemistry Research, International Journal of Biological and Chemical Sciences, International Journal of Environmental Engineering, Journal of Membrane Science, Korean Journal of Chemical Engineering, Separation Purification and Technology, Separation Science and Technology, Chemical Engineering Communication Scientific Reports. In the case of the most specific journals in my research area, I have participated in several reviews, specifically for the following journals: Analytica Chimica Acta, Desalination and Water Treatment, Journal of Membrane Science, Separation Purification and Technology, and Separation Science and Technology.