



CURRICULUM VITAE (CVA)

CV date 04/12/2024

Part A. PERSONAL INFORMATION

First name	Gerko		
Family name	Oskam		
Gender (*)		Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	gosk@upo.es	URL Web	www.upo.es/investiga/ccs
Open Research and Contributor ID (ORCID)(*)	0000-0002-2105-5874		

(*) Mandatory

A.1. Current position

Position	Professor Physical Chemistry (Catedrático de Universidad)		
Initial date	19/12/2023		
Institution	Universidad Pablo de Olavide		
Department/Center	Department of Physical, Chemical and Natural Systems		
Country	Spain	Teleph. number	0034-634612210
Key words	Solar energy conversion, photoelectrochemistry.		

A.2. Previous positions (research activity interruptions, art. 45.2.c))

Period	Position/Institution/Country/Interruption cause
01/03/2020 – 18/12/2023	Research Professor “Beatriz Galindo – senior”, Universidad Pablo de Olavide, Department of Physical, Chemical and Natural Systems. Sevilla, Spain.
01/01/2011 – 28/02/2020	Researcher and Full Professor; Center for Research and Advanced Studies (CINVESTAV), Department of Applied Physics. Mérida, Yuc., México.
25/10/2001 – 31/12/2010	Researcher and Associate Professor; Center for Research and Advanced Studies (CINVESTAV), Department of Applied Physics. Mérida, Yuc., México.
01/08/1996 – 24/10/2001	Associate Research Scientist; The Johns Hopkins University, Department of Materials Science and Engineering. Baltimore, MD, USA.

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD Chemistry	Utrecht University, The Netherlands	1993
Doctorandus (Drs.) Chemistry	Utrecht University, The Netherlands	1989

Part B. CV SUMMARY

Gerko OSKAM obtained his PhD degree in Chemistry at the Utrecht University in the Netherlands in 1993, on the thesis entitled "The electrochemical properties of metallized III-V semiconductors". The thesis was inspired by the possibility of using sunlight for the generation of the clean fuel, hydrogen,

and focused on fundamental physical and electrochemical aspects. Subsequently, he carried out a postdoctoral stay (1993-1996) and worked as an associate researcher (1996-2001) in the Department of Materials Science and Engineering at the Johns Hopkins University in Baltimore, Maryland, USA. During this period, he started a project on photoelectrochemical solar cells, and other research topics included fundamental semiconductor electrochemistry, supercapacitors, lithium ion batteries, and sol-gel chemistry for the synthesis of nanomaterials. In 2001, he joined the Department of Applied Physics of the Center for Research and Advanced Studies (CINVESTAV) in Mérida, Yucatán, México. He set up and consolidated a successful and productive research group, centered on the conversion of solar energy to electricity, usable heat, and clean fuel. During his 19 years at CINVESTAV-Mérida, he has led research projects on the synthesis and application of functional nanomaterials, transport and recombination mechanisms in dye-sensitized and hybrid perovskite solar cells, solar generation of hydrogen, and materials for efficient conversion of solar energy to thermal energy. He was the coordinator or principal investigator of more than 10 research and infrastructure projects, totaling more than \$40,000.000 M.N. (Mexican pesos), which corresponds to more than 2,000.000 €. He was the Coordinator of a 5-yr, 1,000.000 € project on solar-to-thermal energy conversion systems that involved the participation of 3 other institutions. He has also participated in number of projects and contracts with industry related to solar energy conversion. From 2020 – 2023, he held a Distinguished Researcher position (Beatriz Galindo senior) at the University Pablo de Olavide (UPO), where he started a Full professor position on December 19th, 2023. At UPO, he has served as PI on one European project, and is currently PI on two projects and Co-PI on two more projects. He also is the (co-)advisor of 4 graduate students.

He has made important contributions to the formation of new researchers, both via teaching and in the direction of thesis work for Bachelor, Master's and Doctorate students. He has graduated 20 PhD (of which 10 as only advisor) and 16 Master's students, and was the thesis director of 10 undergraduate students. Internationalization has been a key aspect to generating high-level and high-impact research; hence, he has always maintained strong collaborations around the world. His graduate students from Mexico have conducted research stays of 6 months or more in the USA, UK, Belgium, Sweden, Spain, Japan, and China, resulting in several still active and productive collaborations. He has collaborated with and trained 12 postdocs who today also enjoy successful academic careers. The graduates of his group now occupy Professor positions at the Autonomous University of Yucatán, the University of Quintana Roo, the Autonomous University of Campeche, the Autonomous University of Carmen, and the Benemérita Autonomous University of Puebla. In addition, more recent graduates have obtained postdoctoral positions in the United Kingdom, Brazil and Spain. He has taught 56 courses in the graduate program, and since March 2020, also more than 20 credits at UPO, in Seville, Spain. Because of his solid academic career, he was appointed as Coordinator of both the Master's and PhD programs of the Department of Applied Physics at CINVESTAV for 6 years (2009 – 2015).

His scientific productivity is highlighted by authoring 133 publications in JCR journals and more than 7,000 citations (JCR - Web of Science), resulting in an average of citations per article of more than 50. The high impact is also reflected in the *h*-index of 42 (WoS) and 49 (Google Scholar). He has published 8 book chapters, and served as Associate Editor for 2 JCR journals: Science of Advanced Materials (2008-2012), and the Journal of the Mexican Chemical Society (2014-2019). Other research merits include: (i) he was awarded a 4-yr contract via the prestigious "Beatriz Galindo - senior" program, which is highly competitive; (ii) he has been awarded a Scopus Mexico Award in 2011 for high scientific productivity of high quality, and of high and consistent impact; (iii) he has been included in Stanford University's – Mendeley Top 100,000 Scientists in the World list in both the "career" and the "singleyr" Tables since their inception (appearing at **68,114** and **58,588** in the 2022 "career" and "singleyr" tables, respectively), which is a very significant recognition of the quality and global impact of his scientific research; (iv) he has been member of the Mexican National System of Researchers at the highest Level; (v) in 2021, he was awarded the National Chemistry Award "Andrés Manuel del Río" by the Mexican Chemical Society, which is the most prestigious Chemistry award in Mexico.

Part C. RELEVANT MERITS

C.1. Publications

“Comparing the performance of WO₃ nanoparticles and nanofibers: Photocatalytic dye degradation versus photoelectrochemical water oxidation”. J. C. Expósito-Gálvez, L. Hromadko, M. Sepúlveda, F. o J. Peón- Díaz, S. D. Coria-Quñones, O. Jiménez-Sandoval, J. M. Macak, G. Oskam. *Electrochim. Acta* **474**, 143545 (2024).

“Charge Dynamics at Surface-Modified, Nanostructured Hematite Photoelectrodes for Solar Water Splitting”. A. Vega-Poot, M. Rodríguez-Pérez, J. Becerril-González, I. Rodríguez-Gutiérrez, J. Su, G. Rodríguez-Gattorno, W. Y. Teoh and G. Oskam. *J. Electrochem. Soc.* **169**, 056519 (9 pp) (2022).

“Optical, Electrochemical, and Photoelectrochemical Behavior of Copper Pyrovanadate: A Unified Theoretical and Experimental Study”. A. Vali, H. P. Sarker, B. Heredia Cervera, I. Rodríguez-Gutiérrez, M. K. Hossain, M. N. Huda, G. Oskam, and K. Rajeshwar. *J. Phys. Chem. C* **125**, 19609-19620 (2021).

“Impact of the implementation of a mesoscopic TiO₂ film from a low-temperature method on the performance and degradation of hybrid perovskite solar cells”. A. Castro-Chong, W. Qiu, J. Bastos, N. Tchamba Yimga, R. García-Rodríguez, J. Idígoras, J. A. Anta, T. Aernouts, G. Oskam. *Sol. Energy* **201**, 836–845 (2020).

“An intensity-modulated photocurrent spectroscopy study of the charge carrier dynamics of WO₃/BiVO₄ heterojunction systems”. I. Rodríguez-Gutiérrez, E. Djatoubai, J. Su, A. Vega-Poot, G. Rodríguez-Gattorno, F. L. Souza, G. Oskam. *Sol. Energ. Mater. Sol. Cells*, **208**, 110378 (11 pag.) (2020).

“Correlation between the Effectiveness of the Electron-Selective Contact and Photovoltaic Performance of Perovskite Solar Cells”. K. Valadez-Villalobos, J. Idígoras, L. P. Delgado, D. Meneses-Rodríguez, J. A. Anta and G. Oskam. *J. Phys. Chem. Lett.* **10**, 877–882 (2019).

“Modulated anodization synthesis of Sn-doped iron oxide with enhanced solar water splitting performance”. X. Lv, I. Rodriguez, C. Hu, J. Shang, P. H.-L. Sit, C. Ye, G. Oskam, W. Y. Teoh. *Mater. Today Chem.* **12**, 7–15 (2019).

“Charge Transfer and Recombination Dynamics at Inkjet-Printed CuBi₂O₄ Electrodes for Photoelectrochemical Water Splitting”. I. Rodríguez-Gutiérrez, R. García-Rodríguez, M. Rodríguez-Pérez, A. Vega-Poot, G. Rodríguez Gattorno, B. A. Parkinson, and G. Oskam. *J. Phys. Chem. C*, **122**, 27169–27179 (2018).

“Brookite-Based Dye-Sensitized Solar Cells: Influence of Morphology and Surface Chemistry on Cell Performance”. D. Pourjafari, D. Reyes-Coronado, A. Vega-Poot, R. Escalante, D. Kirkconnell-Reyes, R. García-Rodríguez, J. A. Anta, and G. Oskam. *J. Phys. Chem. C*, **122**, 14277–14288 (2018).

“Charge transfer and recombination kinetics at WO₃ for photoelectrochemical water oxidation”. M. Rodríguez-Pérez, I. Rodríguez-Gutiérrez, A. Vega-Poot, R. García-Rodríguez, G. Rodríguez-Gattorno, G. Oskam. *Electrochim. Acta*, **258**, 900-908 (2017).

C.2. Congress

I. Rodríguez-Gutiérrez, M. Rodríguez-Pérez, A. Vega-Poot, J. C. Expósito-Gálvez, J. A. Anta, G. Rodríguez-Gattorno, J. Su, and **G. Oskam**. “Strategies to improve the efficiency of photoelectrochemical water splitting systems based on modified WO₃ and Fe₂O₃”. *Invited Oral presentation*. 23rd International Conference on Photochemical Conversion and Storage of Solar Energy (IPS-23), Lausanne, Switzerland; August 2 – 5, 2022

G. Oskam. “Photoelectrochemistry of Semiconducting Oxide Materials for Solar Water Splitting”. *Invited Oral presentation*. 235th ECS Meeting, Dallas, TX, USA; May 26 – 30, 2019.

G. Oskam, J. Villanueva-Cab, J.A. Anta. “Charge transport and recombination in nanostructured materials for photoelectrochemical and solar cells”. *Invited Oral Presentation*. CIMTEC, Symposium

I: New Concepts and Advances in Photocatalytic Materials for Energy and Environmental Applications. Perugia, Italy, June 5 – 7, 2016.

G. Oskam, J. A. Anta. “Dye-sensitized solar cells based on ZnO”. *Invited Oral Presentation*. EMN Meeting on Photovoltaics: Energy Materials Nanotechnology. Hong Kong, China, January 18 – 21, 2016.

C.3. Research projects

Selective and reflective materials for solar-to-thermal energy conversion systems. Coordinator: G. Oskam (CINVESTAV-Mérida). Project S0019-2013-02/207450 within the Mexican Center for Innovation in Solar Energy (CeMIE-Sol); Project P18 (FSE-CONACYT-SENER, México). Duration: 26 March 2014 - 25 December 2018. Funding: \$20,000,000 M.N. (1,000.000 € of which 550.000 € for CINVESTAV-Mérida).

Application of selective coatings based on electrodeposited nickel / black nickel onto protoypys of solar collectors, and comparison with comercial collectors. Coordinator: G. Oskam (CINVESTAV-Mérida). Project S0019-2013-02/207450 within the Mexican Center for Innovation in Solar Energy (CeMIE-Sol); Project P18 (FSE-CONACYT-SENER, México). Duration: 26 March 2017 - 25 December 2018. Funding: \$1,250,000 M.N. (76.000 € of which 38.000 € for CINVESTAV-Mérida).

Photoelectrochemical generation of the clean fuel hydrogen. Principal Investigator: G. Oskam (CINVESTAV-Mérida). Sub-project SP4 of Project 254667: Consolidation of the Renewable Energy Laboratory of the South-West (LENERSE) (FSE-CONACYT-SENER, México). Duration: 15 August 2017 – 14 March 2022. Funding: \$2,000,000 M.N. (90.000 €).

Charge collection and recombination processes in dye-sensitized solar cells: Effects of the charge density. Principal Investigator (until 1 March 2020) & Participant: G. Oskam (CINVESTAV-Mérida). Project A1-S-21018: Basic Sciences, CB-2017/2018 (SEP-CONACYT, México). Duration: 31 October 2019 – 30 October 2022. Funding: \$2,000,000 M.N. (85.000 €).

Multiscale modeling and design of photoelectrochemical interfaces. Principal Investigator: G. Oskam (1 September 2020 – 30 June 2021). Project PCIN-2017-102. Ministerio de Economía y Competitividad. Duration: 1 July 2018 – 30 June 2021). Funding: 105.000 €.

Solar fuels: Direct photoelectrochemical generation of hydrogen (H2SOLDIR). Principle Investigator: G. Oskam. Project ProyExcel_00543. Consejería de Universidad, Investigación e Innovación. Junta de Andalucía. Duration: 2 Dec 2022 – 31 Dec 2025. Funding: 165.500 €.

Screen-printed hybrid perovskite solar cells: New materials, sustainable methods, and scale-up (IMPRESOL). Principle Investigator: G. Oskam. Project CNS2022-135694. Ministerio de Ciencia e Innovación. Vigencia: 01/09/2023 - 31/08/2025. Funding: 199.429 €.

C.4. Contracts, technological or transfer merits

Formulations and composites with antibacterial, antimicrobial, antimycotic and/or antiviral properties (Formulaciones y compósitos con propiedades antibacterianas, antimicrobianas, antimicóticas y/o antivirales). Patricia Quintana Owen, **Gerko Oskam**, Benjamín Otto Ortega Morales, Susana del Carmen de la Rosa García, Carlos Antioco Guerrero Sánchez, Nikte Maricela Gómez Ortiz, Montserrat Soria Castro, William Santiago González Gómez, Sergio Alberto Gómez Cornelio. CINVESTAV-IPN & UAC. México: **Patent No. 382858**. (May 24, 2021).

Design of a pilot plant for selective coatings on tubes of up to 1.5 m in length (Diseño de planta piloto para recubrimientos selectivos en tubos de hasta 1.5 m de largo). PI: Gerko Oskam. Company: Energía, Suministros e Instalaciones, S.A. de C.V. Duration: April 15 – December 20, 2016. Funding: \$666,667.24 M.N. (35,000 €).

Vapor phase deposition system to obtain selective coatings for the generation of heat (Sistema de deposición en fase vapor para obtener superficies selectivas para la generación de calor). PI: Gerko Oskam. Company: Administración a Distancia Sustentable, S.A. de C.V. Duration: April 20, 2015 – January 29, 2016. Funding: \$413,793.10 M.N. (23,000 €).