

DATOS PERSONALES

Nombre y Apellidos:	Carlos José Álvarez Gallego	
Departamento:	Ingeniería Química y Tecnología de Alimentos	
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Dirección:	Facultad de Ciencias. Avd. República Saharaui, 9. Puerto Real CP 11510	
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Grupo de Investigación:	Tecnologías del Medio Ambiente (TEP-181)	
Núm. identificación del investigador	Researcher ID	O-5039-2015
	Código Orcid	0000-0002-1222-2482

FORMACIÓN ACADÉMICA:

Licenciatura/Grado/Doctorado	Universidad
Licenciado en Ciencias Químicas	Universidad de Cádiz
Doctor por la Univ. de Cádiz	Universidad de Cádiz

ACTIVIDAD INVESTIGADORA

Breve Resumen del Curriculum Investigador: (max. 3500 caracteres)

The research work has focused mainly on three topics: Anaerobic treatment of liquid discharges, biomethanization of organic solid waste and production of bio-hydrogen. In particular, its work has focused on the optimization of processes for biomethanization of the organic fraction of municipal solid waste (OFMSW) and the application of different pre-treatments as well as the acidogenic anaerobic via for the production of biohydrogen. Since 1997, he has been a full member of the Environmental Technologies Research Group (TEP181), which has been considered "Group of excellence" of the Regional Government of Andalusia. His Doctoral Thesis was titled: Test of different procedures for the start-up of a dry anaerobic co-digestion process of OFMSW and sewage sludge in thermophilic range (Univ. de Cádiz, April 2005) with outstanding cum laude and published as book with ISBN 84-7786-356-3.

He has developed a remarkable transfer trajectory in the topic of analysis, treatment and management of water and waste through 45 R+D+I contracts (article 83 of the Law of Universities 4/2007). He has been principal researcher of this contracts six times. On the other hand, also has been reached five patents (two of them with international extension to more 100 countries) and he has been co-founder in 2009 of a spin-off technology-based company of the University of Cadiz (Biovalora Ltd.) dedicated to environmental consulting and the exploitation of research results.

The most relevant scientific activities includes participation in 18 public funded research projects and it is especially noteworthy that he has been Principal Researcher of the Spanish Project CTM2013-43938R completed in December 2017 and evaluated as successful. The scientific productivity -since 2009- could be measured as 27 publications in JCR-journals, (18 classified as Q1) and the co-authorship of two books and three book chapters. Since 2017, a new scientific topic has been incorporated in his career: Production of bioplastic precursors (PLA and PHAs) from lignocellulosic biomass by means of dark fermentation. This topic is being developed in the framework of the Spanish Project CTM2016-79071-R in collaboration with the AGR-203 group.

Indicadores generales de calidad de la producción científica

Publicaciones en Revistas Internacionales en los últimos 10 años:	26 (JCR)
Número de tesis doctorales dirigidas en los últimos 10 años:	2
Libros y Capítulos de Libros en los últimos 10 años:	5
Participaciones en Congresos Internacionales en los últimos 10 años:	19
Citas totales:	403 (2009-2018)

- **Línea/s de Investigación:** (Título y breve resumen)

Tratamiento anaerobio de vertidos
Biometanización de residuos sólidos de carácter orgánico
Producción de bio-hidrógeno
Producción de polihidroxicarboxilatos

- **Proyectos y Contratos de Investigación:**

Biohydrogen production and valorization from municipal solid wastes. Ref: P07-TEP-02472. Department of Innovation, Science and Enterprise (Regional Government of Andalusia). Program of Excellence Research Projects. Period: 2008-2012. Affiliation: University of Cádiz. Grant: 321,195.09 €. Principal Researcher Luis I. Romero García. Participation: Research member
Integral biological treatment of the organic fraction of municipal solid waste: Promoting hydrogen production by anaerobic two-phase process. Ref. CTM2007-62164/TECNO. Ministry of Education and Science (Spain). Program of Environmental Science and Technology of the Spanish R+D+I national Plan. Period: 2007-2011. Affiliation: University of Cádiz. Grant: 348,480.00 €. Principal Researcher Luis I. Romero García . Participation: Research member
Development of sustainable systems for the production and use of agro-industrial biogas in Spain (PROBIOGAS). Ref. PSS-120000-2008-57. Ministry of Innovation, Science and Technology (Spain). National Energy Program. Scientific and Technological Projects. Period: 2008-2010. Affiliation: University of Cádiz. Grant: 258,000.00 €. Principal Researcher Andrés Pascual Vidal (AINIA). Participation: Research member.
Integral conception of the sewage treatment plant of the XXI century. Development of technologies for the treatment and resources recovery from wastewater (NOVEDAR). Ref. CSD-2007-00055. Ministry of Innovation, Science and Technology (Spain). Program CONSOLIDER-INGENIO of the Spanish National Plan of R+D+I. FECYT. Period: 2007-2013. Affiliation: University of Cádiz. Grant: 450,000.00 €. Principal Researcher Juan Lema Rodicio (USC). Participation: Research member.
Valorization of WWTP sludge: Obtaining class-A biosolids for use as fertilizers in agriculture. Ref. 148/PC08/3-04.3. Ministry of Environment (Spain). Program Spanish National Plan of R+D+I. Period: 2008-2011. Affiliation: University of Cádiz Grant: 225,500.00 €. Principal Researcher Montserrat Pérez García. Participation: Research member
Promoting bio-hydrogen production from the organic fraction of municipal solid waste and biosolids. Ref. CTM2010-17654/TECNO. Ministry of Industry, Science and Innovation (Spain). Subprogram of non-oriented projects for fundamental research. Period: 2011-2014. Affiliation: University of Cádiz. Grant: 181,500.00 €. Principal Researcher: Luis I. Romero García. Participation: Research member
Anaerobic digestion of exhausted sugar beet cosettes and codigestion with livestock manure in different temperature ranges. Energy evaluation. Ref. CTM2013-43938-R. Ministry of Economy and Competiveness (Spain). National Program R+D+I Oriented to Social Challenges. Period: 2014-2017. Affiliation: University of Cádiz. Grant: 199,650.00 €. Principal Researcher: Carlos J. Álvarez Gallego. Participation: Principal Researcher
Integration of simultaneous saccharification and fermentation with dark fermentation: production of bio-plastic precursors from exhausted beet cosettes. Ref. CTM2016-79071-

R. Ministry of Economy and Competiveness (Spain). National Program R+D+I Oriented to Social Challenges. Period: 2017-2019. Affiliation: University of Cádiz. Grant: 205,700.00 €. Principal Researcher: Ana M. Blandino Garrido. Participation: Research member

- **Publicaciones:** (más relevantes en los últimos 10 años):

Romero Aguilar, M. A.; Fernández Güelfo, L.A.; Álvarez-Gallego C.J.; Sales, D.; Romero, L.I. (2013). "Effect of HRT on hydrogen production and organic matter solubilization in acidogenic anaerobic digestion of OFMSW". Chemical Engineering Journal 219, 443-449. IF: 4.058 (JCR, 2013) Cites (WoS): 42 Cites (Scopus): 46
Aboudi, K.; Álvarez-Gallego C.J.; Romero, L.I. (2015). "Semi-continuous anaerobic co-digestion of sugar beet byproduct and pig manure: Effect of the organic loading rate (OLR) on process performance". Bioresource Technology 194, 283-290. IF: 4.917 (JCR, 2015) Cites (WoS): 38 Cites (Scopus): 44
Fernández Güelfo, L.A.; Álvarez-Gallego C.J.; Sales, D.; Romero, L.I. (2011). "The use of thermochemical and biological pretreatments to enhance organic matter hydrolysis and solubilization from organic fraction of municipal solid waste (OFMSW)". Chemical Engineering Journal 168, 249-254. IF: 3.461 (JCR, 2011) Cites (WoS): 35 Cites (Scopus): 38
Fernández Güelfo, L.A.; Álvarez-Gallego C.J.; Sales, D.; Romero, L.I. (2010). "Start-up of thermophilic-dry anaerobic digestion of OFMSW using adapted modified SEBAC inoculum". Bioresource Technology 101, 9031-9039. IF: 4.365 (JCR, 2010) Cites (WoS): 35 Cites (Scopus): 40
Angeriz-Campoy, R.; Álvarez-Gallego C.J.; Romero, L.I. (2015). "Thermophilic anaerobic co-digestion of organic fraction of municipal solid waste (OFMSW) with food waste (FW): Enhancement of bio-hydrogen production". Bioresource Technology 194, 291-296. IF: 4.917 (JCR, 2015) Cites (WoS): 32 Cites (Scopus): 40
Tyagy, V.K.; Angeriz-Campoy, R.; Álvarez-Gallego C.J.; Romero, L.I. (2014). "Enhancement in hydrogen production by thermophilic anaerobic co-digestion of organic fraction of municipal solid waste and sewage sludge-Optimization of treatment conditions". Bioresource Technology 164, 408-415. IF: 4.494 (JCR, 2014) Cites (WoS): 28 Cites (Scopus): 31
Fernández Güelfo, L.A.; Álvarez-Gallego, C.J.; Sales, D.; Romero, L.I. (2011). "The effect of different pretreatments on biomethanation kinetics of industrial Organic Fraction of Municipal Solid Wastes (OFMSW)". Chemical Engineering Journal 171, 411-417. IF: 3.461 (JCR, 2011). Cites (WoS): 26 Cites (Scopus): 30
<i>Books</i>
García Morales, J. L.; Álvarez Gallego, C. J.; Paredes Gil, C. (and 5 more). "Organic wastes. Agrofood wastes". (Collection: "From waste to resource, the road to sustainability"). Editorial Mundiprensa. Pages: 344. ISBN: 978-84-8476-702-2. Spain (2015).
Solera Del Río, R.; Álvarez Gallego, C. J.; Aymerich Soler, E. (and 10 more). "Process of biotransformation of organic matter. Biological aspects of anaerobic digestión". (Collection: "From waste to resource, the road to sustainability"). Editorial Mundiprensa. Pages: 319. ISBN: 978-84-8476-700-8. Spain (2014).
<i>Book Chapter</i>
Aboudi, K.; Fernández Güelfo, L. A.; Álvarez Gallego, C. J.; García Morales, J. L.; Romero García, L. I. Chapter title: "Polyhydroxyalkanoates production from the effluent of the acidogenic anaerobic digestion: An overview" in "Post treatments of anaerobically treated effluents". Editorial IWA Publishing. Pages: chapter 20 (book 460). ISBN: 978-1-7804-0973-3. United Kingdom (2019).

- Patentes:

Biological treatment of municipal solid wastes. Sales, D.; Romero García, L. I.; Álvarez-Gallego, C. J.; Fernández Güelfo, L. A. Ref. P2008-01282. Approval date: 09/01/2010. Priority country: Spain. International Extension: WO2096/135967(A1). More than 100 countries. Commercial exploitation: No. In the past was commercialized by Biovalora Ltd..

Procedure for anaerobic digestion of municipal solid wastes in temperature phased system. Fernández, J.; Romero García, L. I.; Pérez, M.; Álvarez-Gallego, C. J.; Sales, D. Ref. P2010-01630. Approval date: 05/27/2013. Priority country: Spain. International Extension: WO12085300. More than 100 countries. Commercial exploitation: No. In the past was commercialized by Biovalora Ltd.

Procedure for the transformation of dry cladodes cactus of *Opuntia ficus-indica* to produce second generation bioethanol. Zaafour, K.; Hamdi, M.; Fernández Güelfo, L. A.; Álvarez Gallego, C. J.; Romero García, L. I.; Sánchez Villasclaras, S.; Fernández, J. Ref. P2014-00440. Approval date: 05/30/2014. Priority country: Spain. International Extension: No. Commercial exploitation: No.

Procedure for the transformation of *Posidonia oceanica* to produce second generation bioethanol. Zaafour, K.; Hamdi, M.; Fernández Güelfo, L. A.; Álvarez Gallego, C. J.; Romero García, L. I.; Sánchez Villasclaras, S.; Fernández, J. Ref. P2014-00441. Approval date: 05/30/2014. Priority country: Spain. International Extension: No. Commercial exploitation: No

- Otros aspectos relacionados con la Investigación: