

# Maria Solé Bundó, MSc. *Curriculum vitae*

## CONTACT INFORMATION

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Address: Universitat Politècnica de Catalunya (UPC)  
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**Main fields of interest:** civil engineering; environmental engineering; wastewater treatment; water reclamation and reuse; waste treatment; anaerobic digestion; microalgae; co-digestion; pretreatments

## EDUCATION

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- 2014-... **PhD Environmental Engineering, Universitat Politècnica de Catalunya (UPC), Barcelona, Spain.**  
Thesis: Strategies to improve the anaerobic digestion of biomass from microalgae-based wastewater treatment systems.
- 2006-2013 **BSc and MSc Civil Engineering (Ingeniería de Caminos, Canales y Puertos), specialization in Environmental and Sanitary Engineering. Universitat Politècnica de Catalunya (UPC), Barcelona, Spain.**  
Final project: Project of the WWTP and associated collectors in La Llacuna (L'Anoia, Catalonia).  
Thesis: Effect of microwave pre-treatment on the anaerobic digestion of algal biomass.

## WORK EXPERIENCE

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- 04/14- ... **Pre-doctoral Researcher (FPI-UPC) at the Department of Hydraulic, Maritime and Environmental Engineering at the Universitat Politècnica de Catalunya (UPC), Barcelona.**  
Topic: strategies to improve microalgae anaerobic digestion.
- 06/15-12/15 **Research stay at the Laboratory of Environmental Biotechnology (INRA-LBE), Narbonne (France).**  
Topic: optimisation of microalgae co-digestion with wheat straw.
- 12/13-04/14 **Internship at the Department of Hydraulic, Maritime and Environmental Engineering (UPC collaboration grant) at the Universitat Politècnica de Catalunya (UPC), Barcelona.**  
Tasks: support teaching activities, research in co-digestion of microalgae and preparation of technical reports on water quality and reuse.
- 10/12-09/13 **Engineering Trainee at INYPSA Informes y Proyectos, S.A (consulting firm for the civil engineering industry), Barcelona.**

Tasks: technical work in the field of water and environmental engineering (participation in design projects and preparation of technical documentation for national and international tenders).

## LANGUAGES

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English – French – Spanish – Catalan

## PARTICIPATION IN RESEARCH PROJECTS

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- 2015-2017 **Biogas production from microalgae-bacteria grown in closed photobioreactors for wastewater treatment - FOTOBIOGAS** (CTQ2014-57293-C3-3-R), financed by the Spanish Ministry of Economy and Competitiveness, subproject coordinated by the GEMMA (UPC)
- 2015- 2016 **ALERA** (local actions in water reuse), financed by Pyrénées-Méditerranée Euroregion, call for projects: *Efficacite et sobriete dans l'usage des ressources (eau ou energie) 2013*. <http://wp.granollers.cat/alera/>
- 2014- 2015 **Algal biomass production and digestion from wastewater – DIPROBIO** (CTM2012-37860), financed by the Spanish Ministry of Science and Innovation, coordinated by the Group of Environmental Engineering and Microbiology (GEMMA-UPC)
- 2012-2014 **Biogas production from algae biomass produced in high rate ponds for wastewater treatment – BIOALGAS** (CTM2010-17846), financed by the Spanish Ministry of Science and Innovation, coordinated by the Group of Environmental Engineering and Microbiology (GEMMA-UPC)

## ARTICLES IN REFEREED JOURNALS

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- 2017 **Solé, M.**, Eskicioglu,C., Carrère, H., Garfí, M., Ferrer, I. (2017) Anaerobic co-digestion of thermo-alkali-pretreated microalgal biomass with wheat straw under batch and semi-continuous flow conditions. *Bioresource and Technology*, in preparation.
- Arias, D., **Solé, M.**, Pera, H., Uggetti, E., Garfí, M., García, J., Ferrer, I. (2017) A closed loop biorefinery recovering wastewater treatment effluents for biomass cultivation and biogas production. *Algal Research*, in preparation.
- Solé, M.**, Passos, F., Garfí, M., Matamoros, V., Ferrer, I. (2017) Co-digestion of primary sludge and microalgae from wastewater treatment systems: effect on biogas production and emerging contaminants removal. *Environmental Science and Technology*, in preparation.
- 2016 **Solé, M.**, Cucina, M., Folch, M., Tapias, J., Gigliotti, G., Garfí, M., Ferrer, I. (2016) Assessing the agricultural reuse of the digestate from microalgae anaerobic digestion and co-digestion with sewage sludge. *Science of the Total Environment*, submitted.
- Solé, M.**, Carrère, H., Garfí, M., Ferrer, I. (2016) Enhancement of microalgae anaerobic digestion by thermo-alkaline pretreatment with lime (CaO). *Algal research*, submitted.

- Uggetti, E., Passos, F., **Solé, M.**, Garfí, M., Ferrer, I., (2016) Recent Achievements in the Production of Biogas from Microalgae. Waste and Biomass Valorization 1–11. DOI: 10.1007/s12649-016-9604-3
- 2013 Passos, F., **Solé, M.**, García, J., Ferrer, I. (2013) Biogas production from microalgae grown in wastewater: effect of microwave pre-treatment. Applied Energy, 108, 168-175.

#### BOOK CHAPTERS

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- 2014 Uggetti, E., Passos, F., **Solé, M.**, García, J., Ferrer, I. (2014) Biogas from algae via anaerobic digestion. Algae Biotechnology: Products and Processes, Ed. by Chisti, Y. Springer, UK.

#### CONFERENCE PRECEEDINGS

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- 2016 **Solé, M.**, Carrère, H., Eskicioglu, C., Garfí, M., Ferrer, I. (2016). Biogas production from microalgae: effect of pretreatments and co-digestion. 1st International Conference on Bioresource Technology for Bioenergy, Bioproducts & Environmental Sustainability. Sitges, Barcelona (Spain)
- Solé, M.**, Garfí, M., Ferrer, I. (2016) Mejora de la digestión anaerobia de microalgas mediante codigestión y pretratamientos. Mesa Española de Tratamiento de Aguas (META), Madrid, España.
- Solé, M.**, Carrère, H., Eskicioglu, C., Solimeno, A., Garfí, M., Ferrer, I. (2016). Microalgae bioconversion to biogas: co-digestion and pretreatment strategies. 6th International Conference on Algal Biomass, Biofuels and Bioproducts; San Diego (USA)
- Solé, M.**, Carrère, H., Eskicioglu, C., Garfí, M., Ferrer, I. (2016). Improving microalgae anaerobic digestion in algal-based wastewater treatment systems: co-digestion and pretreatment strategies. Xth International Society for Environmental Biotechnology Conference; Barcelona (Spain)
- Solé, M.**, Carrère, H., Eskicioglu, C., Garfí, M., Ferrer, I. (2016) Mejora de la digestión anaerobia de microalgas mediante codigestión y pretratamientos. BIOMETA 12ª Edición, Barcelona, Spain.
- Arias, D., **Solé, M.**, Uggetti, E., Garfí, M., García, J., Ferrer, I. (2016) Tertiary wastewater treatment by growing microalgae to produce biogas and treat the digestate. Young Algaeneers Symposium. Qwara, Malta.
- 2015 **Solé, M.**, Cucina, M., Matamoros, V., Folch, M., Tapias, J., Garfí, A., Ferrer, I. (2015). Codigestión de microalgas y fango primario: producción de energía y reutilización del digestato. VI Jornada de lodos de depuradora; Barcelona (Spain).
- Solé, M.**, Passos, F., Garfí, M., Ferrer, I. (2015). Microalgae and primary sludge co-digestion: effect of thermal pretreatment, energy balance and digestate characteristics. AD14 World Congress on Anaerobic Digestion, Viña del Mar (Chile).
- Ferrer, I., Gutiérrez, R., **Solé, M.**, Arias, D., Uggetti, E., Garfí, M., García, J. (2015). Towards the production of biofuels and non-food bioproducts from microalgae grown in wastewater. 5th International Conference on Algal Biomass, Biofuels and Bioproducts; San Diego (USA).

- Ferrer, I. Gutierrez, R., **Solé, M.**, Arias, D., Uggetti, E. Garfí, M., García, J. (2015) Bioenergy and bioproducts from microalgae grown in wastewater. 12th International Conference on Renewable Resources and Biorefineries; York (UK).
- Ferrer, I., Gutiérrez, R., **Solé, M.**, Arias, D., Uggetti, E., Garfí, M., García, J. (2015). Towards energy neutral microalgae-based wastewater treatment systems for water reuse and resource recovery. Environmental Technology for Impact Conference (ETEI2015); Wageningen (The Netherlands).
- Solé, M.**, Folch, M., Tapias, J., Matamoros, V., Garfí, M., Ferrer, I. (2015). Characterization of the digestate from microalgae anaerobic digestion and co-digestion with sewage sludge for agricultural reuse. III International Symposium on Organic Matter Management and Compost Use in Horticulture, Murcia (Spain).
- 2014 **Solé, M.**, Passos, F., Garfí, M., Ferrer, I. (2014). Co-digestion of microalgae and primary sludge as by-products from algal-based wastewater treatment systems. Biogas Science 2014, Vienna.
- Passos F., **Solé M.**, García J., Ferrer, I. (2014). Optimising biogas production from microalgae grown in wastewater: comparing pretreatment methods. Biogas Science 2014, Vienna.
- Ferrer, I., Passos, F., Gutiérrez, R., **Solé, M.**, Uggetti, E., Solimeno, A., García, J. Biogas production from microalgae. The anaerobic digestion of by-products from the food industry: local solutions to global problems. IRTA, Caldes de Montbui, Catalunya.
- Ferrer, I., Passos, F., Gutiérrez, R., **Solé, M.**, Uggetti, E., García, J. Producción de microalgas y biogás en sistemas de tratamiento de aguas residuales. Mesa Española de Tratamiento de Aguas (META 14), Alicante, Spain.
- Solé, M.**, Passos, F., Sicart, A., Ferrer, I. Codigestion of (pretreated) microalgae and primary sludge: closing the loop in wastewater treatment systems. Young Algaeneers Sysposium 2014, Montpeiller -Narbonne, Francia.
- 2011 Passos, F., Cordon, S., **Solé, M.**, Ferrer, I., Biogas production from algae biomass grown in high rate ponds for wastewater treatment. Jornadas de Investigación e Innovación a la Escuela de Caminos. Barcelona, Spain.

#### TECHNICAL REPORTS - TECHNOLOGY TRANSFER

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- 2014 Removal of emerging organic contaminants in the Can Cabanyes wetland system. García, J. & **Solé, M.** Contractor: Town Council of Granollers.
- The Can Cabanyes reclaimed water system: a global perspective. García, J. & **Solé, M.** Contractor: Town Council of Granollers.
- Assessment of the functioning of Can Cabanyes water regeneration plant (PARCC) (Parc Periurbà SPJ4, Granollers). January 2012-December 2013. García, J. & **Solé, M.** Contractor: Town Council of Granollers.
- Assessment of the functioning and efficiency of a surface flow treatment wetland in Granollers (Barcelona). January 2012-December 2013. García, J. & **Solé, M.** Contractor: Town Council of Granollers.

## TEACHING ACTIVITIES - SUPERVISION OF STUDENTS

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- 2016 Teaching assistant in the subject "Experimental Processes of Water Treatment" at the School of Civil Engineering (UPC-BarcelonaTech).
- Teaching assistant in the workshop: "Aigua, com es neteja per a què la puguem beure?" adressed to high school students.
- Supervision of the BSc/MSc thesis:
- Anàlisi del cicle de vida de sistemes de microalgues per a la depuració d'aigües residuals. Núria Sumalla (UPC-BarcelonaTech).
  - Producción de biogás a partir de microalgas y cianobacterias: efecto de los pretratamientos térmico y alcalino. Alejandro González, (UPC-BarcelonaTech).
  - Codigestió anaeròbia de microalgues i subproductes agrícoles. Xavi Baronet (UPC-BarcelonaTech).
- Supervision of the student interships:
- Sarah Louriachi (ENSIL, France).
- 2015 Teaching assistant in the subject "Experimental Processes of Water Treatment" at the School of Civil Engineering (UPC-BarcelonaTech).
- Teaching assistant in the workshop: "Aigua, com es neteja per a què la puguem beure?" adressed to high school students.
- Supervision of the BSc/MSc thesis:
- Copretractament i codigestió de microalgues i fangs secundari. Helena Pera (UPC-BarcelonaTech).
  - Producció de biogàs per digestió i codigestió anaeròbia de microalgues pretractades i fangs primaris. Sofia Aleman (UPC-BarcelonaTech).
- Supervision of the student interships:
- Isabel Urquieta (ENSIL, France).
  - Alfredo Loreto (Universidad Simón Bolívar (USB), Venezuela).
- 2014 Teaching assistant in the workshop: "Aigua, com es neteja per a què la puguem beure?" adressed to high school students.
- Supervision of the BSc/MSc thesis:
- Codigestió anaeròbia de microalgues i fangs primaris de depuradora. Felipe Artigot Zubiria (UPC-BarcelonaTech).
- Supervision of the student interships:
- Sofia Aleman (UPC-BarcelonaTech).
  - Hélène Thomas (ENSIL, France).
  - Joan Ramón Ruiz (UPC-BarcelonaTech).

## AWARDS- HONORS

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- 2015 AGAUR Mobility Grant "*Accions de cooperació en el marc de la Comunitat de Treball dels Pirineus per a l'any 2014 (CTP-DGR). Modalitat B. Ajuts de mobilitat d'investigadors i investigadores (AIRE-CTP)*". Government of Catalonia, Spain.

Oral presentation Award: "Most innovative topic of research" in the selection of the best oral communications in the III International Symposium on Organic Matter Management and Compost Use in Horticulture, organised by ISHS and CSIC. Murcia, Spain.

- 2010 BASF Awards XII, BASF Construction Chemicals Barcelona, *Special mention to the best environmental treatment*, for the work *Deposit of regulating rainwater of Urgell-Mallorca and associated collectors*, Authors: Mònica Batlle, Òscar Pérez and Maria Solé.
- 2005 Caixa Manresa scholarship to the best results in the entrance exams to university.

#### **ATTENDING COURSES AND SEMINARS**

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- 2016 Mesa Española de Tratamiento de Aguas (META), Madrid, España.  
Xth International Society for Environmental Biotechnology Conference; Barcelona (Spain)
- 2015 AD14 World Congress on Anaerobic Digestion (IWA); Viña del Mar, Chile.  
Seminar *Biogas. A new energy source*. - Fundació Gas Natural Fenosa; Barcelona, Spain.  
III International Symposium on Organic Matter Management and Compost Use in Horticulture - Society for Horticultural Sciences (ISHS) & Spanish National Research Council (CSIC); Murcia, Spain
- 2014 Conference *Biogas Science 2014*, BOKU- University of Natural Resources and Life Science, Vienna.  
Symposium *WWTP 21: New technologies and approaches for wastewater sanitation* - Universitat de Barcelona, Barcelona  
Conference on *Low Energy Wastewater Treatment Systems*. Cranfield University, UK.  
*Integrating Human and Sustainable Development of engineering education*. Online course, Universitat Politècnica de Catalunya (UPC)  
*The anaerobic digestion of by-products from the food industry: local solutions to global problems*. IRTA, Caldes de Montbui, Catalunya  
*Oral communication skills*. Directorate General for Labour Relations and Quality Work Department of Enterprise and Employment Barcelona, Catalonia  
*Young Alganeers Symposium 2014*- LBE-INRA & Fédération Française pour les Sciences de la Chimie (FFC), Montpellier - Narbonne, Francia
- 2013 *1st NaWaTech International Workshop*- Universitat Politècnica de Catalunya, Barcelona

#### **OTHER ACHIEVEMENTS**

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- 2016 Organising committee of the 10<sup>th</sup> ISEB Conference, 1st-3rd June 2016 Barcelona, Spain.

Reviewer of the following journals: Algal Research, Science of the Total Environment, Waste and Biomass Valorization.