

## SCIENTIFIC PORTFOLIO

Advanced Oxidation Processes and Adsorption (AOPA)

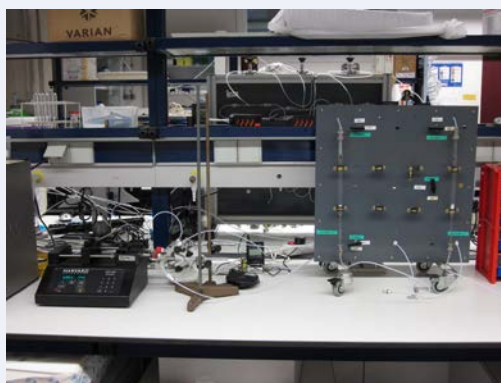
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### Name of scientists in charge

- > **Dr Maria Martín**, Associate Professor. [maria.martin@udg.edu](mailto:maria.martin@udg.edu)
- > **Dr Alba Cabrera**, Postdoctoral researcher. [alba.cabrera@udg.edu](mailto:alba.cabrera@udg.edu)

### Technology description

- > Adsorption on porous materials for air, gas and water treatment.
- > Advanced oxidation processes (fenton-like systems, ozone and UV radiation).
- > New strategies to obtain porous carbon adsorbents from waste materials.
- > Coupling of adsorption and oxidation technologies to biological systems.



*Pilot plant for gas adsorption*



*Laboratory at UdG Faculty of Sciences*

### Research expertise

- > Analysis of gaseous contaminants.
- > Analysis of odor causing compounds.
- > Adsorption for treating of gaseous and water streams.
- > Competitive adsorption of multicomponent gas streams.
- > Modification of activated carbon to obtain tailored adsorbents.
- > Strategies for odor control.
- > Thermal and oxidative regeneration of exhausted adsorbents.
- > Studies on catalytic materials for heterogeneous reactions.
- > Biogas upgrading: removal of siloxanes and VOCs.

## Most relevant projects

- > **SHERLOCK:** A StEp forward in the Resilient management Of Drinking Water Utilities. From applied research to full-scale validation. Spanish Research National Agency. PID2020-112615RA-I00. 2021-2023.
- > **WATSON:** ToWard the development of an EDSS for wAter Treatment works: from basic reSearch to Optimal operatiON at full-scale. Spanish Ministry of Science. CTM2017-83598-R. 2018-2020.
- > **SILCAP:** Selective sIlOXane capture for indoor pCo Air Purifiers. ACCIÓ (Marie Scklodowska Curie COFUND – Tecniospring+ fellowship). TECSPR16-1-0045. 2017-2019.
- > **BiogasApp:** Innovative technologies for biogas upgrading: from basic research to technology assessment. Spanish Ministry of Economy and Competitiveness. CTQ2014-53718-R. 2015-2017.

## Most relevant publications

- > Cabrera-Codony A., Ruiz B., Gil R.R., Popartan L.A., Santos-Clotas E., Martín M.J., Fuente E. (2021). **From biocollagenic waste to efficient biogas purification: Applying circular economy in the leather industry**, *Environmental Technology & Innovation*, Volume 21, 101229
- > Santos-Clotas E., Cabrera-Codony A., Martín M.J. (2020). **Coupling adsorption with biotechnologies for siloxane abatement from biogas**, *Renewable Energy*, Volume 153, Pages 314 – 323.
- > Santos-Clotas E., Cabrera-Codony A., Comas J., Martín M.J. (2020). **Biogas purification through membrane bioreactors: Experimental study on siloxane separation and biodegradation**, *Separation and Purification Technology*, Volume 2381, Article number 116440.
- > Santos-Clotas E., Cabrera-Codony A., Boada E., Gich F., Muñoz R., Martín M.J. (2019). **Efficient removal of siloxanes and volatile organic compounds from sewage biogas by an anoxic biotrickling filter supplemented with activated carbón**, *Bioresource Technology*, Open Access, Volume 294, Article number 122136.
- > A. Cabrera-Codony, E. Santos-Clotas, C.O. Ania, M.J. Martín (2018). **Competitive siloxane adsorption in multicomponent gas streams for biogas upgrading**, *Chemical Engineering Journal* (344), pp 565-573.
- > A. Cabrera-Codony, R. González-Olmos, M. J. Martín (2017). **Zeolites as recyclable adsorbents/catalysts for biogas upgrading: removal of octamethylcyclotetrasiloxane**, *Chemical Engineering Journal* (307), pp 820-827.
- > A. Cabrera-Codony, R. González-Olmos, María J. Martín (2015). **Regeneration of siloxane-exhausted activated carbon by advanced oxidation processes**, *Journal of Hazardous Materials*, 285(21), 501-508.
- > E. Vega, M. Sánchez-Polo, Rafael González-Olmos, María J. Martín (2015). **Adsorption of odorous sulfur compounds onto activated carbons modified by gamma irradiation**, *Journal of Colloid and Interface Science*, 457, November 2015, 78-85.