SCIENTIFIC PORTFOLIO

Advanced Oxidation Processes and Adsorption (AOPA)

Last updated: December 2016

Name of scientists in charge

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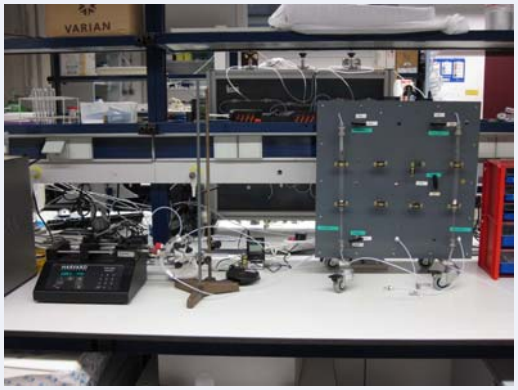
Technology description

> Advanced Oxidation Processes (AOP) using Fenton-like systems, ozone and UV light for wastewater treatment and adsorbent regeneration. Coupling of AOP with biological systems.
> Adsorption of emerging contaminants for gas purification and odor control. Siloxane removal for biogas upgrading.
> New strategies to obtain adsorbents from waste materials.



Pilot plant for gas adsorption

Research expertise

> Advanced oxidation processes for wastewater treatment with H_2O_2 and/or O_3.
> Test and characterization of adsorbent materials
> Analysis of contaminant gases (siloxanes, odorous and sulfur compounds, VOC)

Most relevant projects

> **BiogasApp:** Innovative technologies for biogas upgrading: from basic research to technology assessment. Spanish Ministry of Economy and Competitiveness. CTQ2014-53718-R. 2015-2017.

> **SIRENA:** Siloxane removal from sewage biogas in waste-to-energy processes: adsorption and regeneration by AOPs. Spanish Ministry of Science and Education. CTQ2011-24114. 2011-2015.

> **Odour generation in sludge dryers and its treatment by adsorption/regeneration in activated carbon.** Spanish Ministry of Science and Innovation. PET2008_0261. 2009-2011.

Most relevant publications

> 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.

> E. Vega, M.J. Martín, R. González-Olmos (2014). **Integration of advanced oxidation processes at mild conditions in wet scrubbers for odorous sulphur compounds treatment.** *Chemosphere,* in press.

> M. Canals, R. González-Olmos et al (2013). **Robust iron coordination complexes with N-based neutral ligands as efficient Fenton-like catalysts at neutral pH.** *Environmental Science and Technology* 47(11), 9918-9927.

> A. Anfruns, J. Gabarró, R. González-Olmos et al (2013). **Coupling anammox and advanced oxidation-based technologies for mature landfill leachate treatment.** *Journal of Hazardous Materials,* 258-259, 27-39.

> R. González-Olmos, M. J. Martín et al (2012). **Fe-zeolites as heterogeneous catalysts for solar Fenton-like processes at neutral pH: Mechanistics and applicability in compound parabolic collector pilot plant.** *Applied Catalysis B: Environmental,* 125, 51-58.

> M. Rosell, R. González-Olmos et al (2012). **Critical evaluation of the 2D-CSIA scheme for distinguishing fuel oxygenate degradation reaction mechanisms**. *Environmental Science and Technology*, 46, 4757-4766.