



UNIVERSITAT DE BARCELONA
FACULTAT DE QUÍMICA
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OPTIMISATION OF BIOLOGICAL NITROGEN REMOVAL
PROCESSES TO TREAT REJECT WATER FROM ANAEROBIC
DIGESTION OF SEWAGE SLUDGE

Doctoral Thesis directed by Joan Mata Álvarez

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PUBLICATIONS

- Journal publications

- **Galí, A.**; Dosta, J.; Mata-Álvarez, J. (2006). Use of hydrolysed primary sludge as external carbon source for denitrification in a SBR treating reject water via nitrite. Submitted to Industrial and Engineering Chemistry Research.
- **Galí, A.**; Dosta, J.; van Loosdrecht, M.C.M; Mata-Álvarez, J. (2006). Two ways to achieve an Anammox influent from reject water treatment: partial SBR nitrification and SHARON process. Submitted to Process Biochemistry.
- **Galí, A.**; Dosta, J.; Mata-Álvarez, J. (2006). Optimisation of nitrification-denitrification process in a SBR for the treatment of reject water via nitrite. Submitted to Environmental Technology.
- **Galí, A.**; Dosta, J.; Macé, S.; Mata-Álvarez, J. (2006). Start-Up of a biological sequencing batch reactor to treat supernatant from anaerobic sludge digester. Accepted for publication in Environmental Technology.
- **Galí, A.**; Dosta, J.; van Loosdrecht, M.; Mata-Álvarez, J. (2006). Biological nitrogen removal via nitrite of reject water with a SBR and chemostat SHARON/Denitrification process. Accepted for publication in Industrial and Engineering Chemistry Research.
- **Galí, A.**; Dosta, J.; Macé, S.; Mata-Álvarez, J. (2006) Comparison of reject water treatment with Nitrification/Denitrification via nitrite in SBR and SHARON chemostat process. Accepted for publication in Environmental Technology.
- Dosta, J.; **Galí, A.**; Benabdallah El-Hadj, T.; Macé, S.; Mata-Álvarez, J. (2006). Operation and model description of a SBR treating reject water for Biological Nitrogen Removal via nitrite. Accepted for publication in Bioresource Technology.
- Macé, S.; Dosta, J.; **Galí, A.**; Mata-Álvarez, J. (2006). Optimisation of the nitrogen removal via nitrite in a SBR treating supernatant from the anaerobic digestion of Municipal Solid Wastes. Industrial and Engineering Chemistry Research 45, 2787-2792.

- Publications from congresses

- **Galí, A.**; Dosta, J.; Mata-Álvarez, J. (2005) Optimisation of nitrification-denitrification process in a SBR for the treatment of reject water via nitrite. In: *Proceedings of the IWA Specialised Conference Nutrient Management in Wastewater Treatment Processes and Recycle Streams*. 19-21 September 2005, Krakow (Poland). pp. 925-932. (ISBN 83-921140-1-9)
- **Galí, A.**; Dosta, J.; Macé, S.; Mata-Álvarez, J. (2005) Comparison of reject water treatment with Nitrification/Denitrification via nitrite and a SHARON chemostat process. In: *Proceedings of the IWA Specialised Conference Nutrient Management in Wastewater Treatment Processes and Recycle Streams*. 19-21 September 2005, Krakow (Poland). pp. 1409-1413. (ISBN 83-921140-1-9)
- Dosta, J.; **Galí, A.**; Macé, S.; Mata-Álvarez, J. (2005) Calibration of an extended Activated Sludge Model considering the influence of pH and Temperature. In: *Proceedings of the IWA Specialised Conference Nutrient Management in Wastewater Treatment Processes and*

Recycle Streams. 19-21 September 2005, Krakow (Poland). pp. 1363-1367. (ISBN 83-921140-1-9)

- **Gali, A.**; Dosta, J.; Macé, S.; Torres, R.; Mata-Álvarez, J. (2004). Optimisation of the Nitrification-Denitrification process in a SBR for the Treatment of high Ammonium Streams from Anaerobic Digestion. Application ASM1 to Predict the Nutrient Removal Process. In *proceedings of 9th Biotec*, 19 – 23 July 2004, Oviedo. (ISBN 84-609-1771-1)

- Congresses communications

- Dosta, J.; **Gali, A.**; Macé, S.; Mata-Álvarez, J. (2006). Modelling of a SBR to treat the supernatant from anaerobic digestion of the organic fraction of municipal solid waste. ORBIT 2006. Biological Waste Management - From local to global. 5th International Conference. 13-15 September 2006. Weimar, Germany. (Accepted paper)
- Minoves, M.; **Gali, A.**; Dosta, J.; Mata-Álvarez, J. (2006). Optimisation of a nitrification/denitrification process via nitrite in an SBR treating the liquid fraction of mesophilic digested piggery wastewater. Accepted paper in The Seventh International Symposium on Waste Management Problems in Agro-Industries. 25-27 September 2006, Amsterdam.
- Minoves, M.; Dosta, J.; **Gali, A.**; Mata-Álvarez, J. (2006). Modelling and simulation, using a modified ASM2d model, of a nitrification/denitrification process in an SBR treating the liquid fraction of anaerobically digested piggery wastewater. Reserve paper in The Seventh International Symposium on Waste Management Problems in Agro-Industries. 25-27 September 2006, Amsterdam.
- Dosta, J.; **Gali, A.**; Mata-Álvarez, J. (2006). Modelling of partial nitrification in a SHARON chemostat and in a sequencing batch reactor to achieve an appropriate influent to the Anammox process. Accepted paper in the First Mediterranean Congress: Chemical Engineering for Environment. 4-6 October 2006, Venice, San Servolo. (Poster Communication)
- Pérez, R.; **Gali, A.**; Dosta, J.; Mata-Álvarez, J. (2006). Biological nitrogen removal using sulphide for autotrophic denitrification in a SBR to treat reject water. Proceedings of the First Mediterranean Congress: Chemical Engineering for Environment. 4-6 October 2006, Venice, San Servolo. (Oral Communication)
- **Gali, A.** (2005). Procés d'adaptació de microorganismes per a eliminar altes càrregues de nitrogen mitjançant nitrificació/desnitrificació. Presented in II TRAVARO meeting. July, Barcelona.
- **Gali, A.**; Dosta, J.; Mata-Álvarez, J. (2005). Influence of temperature in the treatment of industrial wastewater from soft-drink bottling processes. 10th Mediterranean Conference, 15 – 18 November 2005, Barcelona.
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- **Gali, A.** (2004). Optimisation of reject water treatment in a SBR with nitrification/denitrification process. Presented in I TRAVARO meeting. July, Barcelona.
- **Gali, A.**; Macé, S.; Mata-Álvarez, J. (2002). Application of SBR Technology to treat supernatant from anaerobic sludge digester. 9th Mediterranean Conference, 26 – 29 November 2002, Barcelona.