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Líneas de Investigación

1. Sistemas de reacción-separación.
OBJETIVO: modelamiento, simulación y validación experimental de procesos híbridos (destilación reactiva y electrodeionización).
2. Bioprocesos enzimáticos y fermentativos.
OBJETIVO: Producción de enzimas y fermentación de ácidos orgánicos.
3. Electroquímica ambiental aplicada.
OBJETIVO: tratamiento de aguas industriales y de servicio a través de métodos electroquímicos.

Publicaciones

1. Eligio P. Rivero, Francisca A. Rodríguez, Martín R. Cruz-Díaz, Ignacio González. Reactive diffusion migration layer and mass transfer wall function to model active chlorine generation in a filter press type electrochemical reactor for organic pollutant degradation. Chemical Engineering Research and Design. 2018.

2. E. P. Rivero, A. Ortega, M. R. Cruz-Díaz, I. González. Modelling the transport of ions and electrochemical regeneration of the resin in a hybrid ion exchange/electrodialysis process for As(V) removal. Journal of Applied Electrochemistry. https://doi.org/10.1007/s10800-018-1191-5. Accepted: 4 April 2018.

3. FernandoF.Rivera, Francisca A. Rodríguez, Eligio P. Rivero, Martín R. Cruz-Díaz. Parametric Mathematical Modelling of Cristal Violet Dye Electrochemical Oxidation Using a Flow Electrochemical Reactor with BDD and DSA Anodes in Sulfate Media. International Journal of Chemical Reactor Engineering. 2018; 20170116.

4. Martín R. Cruz-Díaz, Eligio P. Rivero, Francisca A. Rodríguez, Rosario Domínguez-Bautista. Experimental study and mathematical modeling of the electrochemical degradation of dyeing wastewaters in presence of chloride ion with dimensional stable anodes (DSA) of expanded meshes in a FM01-LC reactor. Electrochimica Acta 260 (2018) 726-737.

5. Francisca A. Rodríguez, Martín R. Cruz-Díaz, Sebastián Gómez, Jorge A. Calderón, Arturo Ortega, Eligio P. Rivero. Generation of Active Chlorine in Acid and Alkaline Medium Using a 3D Anode in an Electrochemical Reactor for Reactive Black 5 Degradation. Journal of Advanced Oxidation Technologies 2018; 21(1). DOI: 10.26802/jaots.2017.0069.

6. Arturo Ortega, Irazema Oliva, Kenia E. Contreras, Ignacio González, Martín R. Cruz-Díaz, Eligio P. Rivero. Arsenic removal from water by hybrid electro-regenerated anion exchange resin/electrodialysis process. Journal: Separation and Purification Technology (2017). Acceptado y en proceso de impresión.

7. Jaramillo-Gutiérrez MI, Rivero EP, Cruz-Díaz M. R, Nino-Gómez ME, Pedraza-Avella JA. Photoelectrocatalytic hydrogen production from oilfield produced wastewater in a filter-press reactor using TiO2-based photoanodes. Catalysis Today 266 (2016) 17–26.

8. Rivero EP, Cruz-Díaz M. R, Almazán-Ruiz FJ, González I. Modeling the effect of non-ideal flow pattern ontertiary current distribution in a filter-press-typeelectrochemical reactor for copper recovery. Chemical Engineering Research and Design. 2 0 1 5; 1 0 0: 422–433.

9. Almazán-Ruiz FJ, Caballero F, Cruz-Díaz M. R,. Rivero EP, Vazquez-Arenas J, González I. Nickel recovery from an electroplating rinsing effluent using RCE bench scale and RCE pilot plant reactors: The influence of pH control. Chemical Engineering Research and Design. 2 0 1 5; 9 7: 18–27.

10. Cruz-Díaz M R, Rivero EP, Almazán-Ruiz F J, Torres-Mendoza Á, González I. Design of a new FM01-LC reactor in parallel plate configuration using numerical simulation and experimental validation with residence time distribution (RTD). Chemical Engineering and Processing: Process Intensification. 2014; 85: 145–154.

11. Cruz-Díaz M R, Arauz-Torres Y, Caballero F, Lapidus G T, Gonzalez I. Recovery of MnO2 from a spent alkaline battery leach solution via ozone treatment. Journal of Power Sources. 2015; 274: 839-845.

12. Francisco J. Almazán-Ruiz, Francisco V. Caballero, Martín R. Cruz-Díaz, Eligio P. Rivero, Ignacio González. Scale-up of rotating cylinder electrode electrochemical reactor for Cu(II) recovery: Experimental and simulation study in turbulence regimen. Electrochimica Acta. Vol. 77, pp. 262– 271 (2012) ISNN: 0013.4686. Doi:10.1016/j.electacta.2012.06.003

13. Martín Cruz-Díaz, Carsten Buchaly, Peter Kreis, Eduardo S. Pérez-Cisneros, Ricardo Lobo-Oehmichen, Andrzej Gorak. Synthesis of n-propyl propionate in a pilot-plant reactive distillation column: Experimental study and simulation. Computers and Chemical Engineering. Vol 39, pp. 118–128 (2012)
ISSN: 0098-1354. Doi:10.1016/j.compchemeng. 2012.01.004.

14. Eligio P. Rivero, Fernando F. Rivera, Martín R. Cruz-Díaz, Elvia Mayen, Ignacio González. Numerical simulation of mass transport in a filter press type electrochemical

reactor FM01-LC. Comparison of predicted and experimental mass transfer coefficient. Chemical Engineering Research and Design. Vol. 90, pp. 1969–1978 (Noviembre 2012). ISSN: 0263-8762. Doi: 10.1016/j.cherd.2012.04.010.

15. M. Cruz-Díaz, F. Rivera, E.P. Rivero, I. González. The FM01-LC reactor modeling using axial dispersion model with a reaction term coupled with a continuous stirred tank (CST). Electrochimica Acta. Vol. 63, pp. 47-54 (febrero 2012). ISNN: 0013.4686. DOI:10.1016/j.electacta.2011.12.038.

16. M.I. Neria-González, J.C. Figueroa-Estrada, M.R. Cruz-Díaz, and R. Aguilar-López. Adaptive. Smooth Observer Design for State Estimation in desulfovibrio alaskensis 6SR cultures. Revista Mexicana de Ingeniería Química. Pág. 137-146 (2011). ISSN: 1665-2738.

17. Fernando F. Rivera, Martin R. Cruz-Díaz, Eligio P. Rivero, Ignacio González. Analysis and interpretation of residence time distribution experimental curves in FM01-LC reactor using Axial Dispersion and Plug Dispersion Exchange models with closed-closed boundary conditions. Electrochimica Acta. Vol. 56, No.1, pp. 361-371 (Diciembre 2010), ISNN: 0013-4686. Doi:10.1016/j.electacta.2010.08.069.

18. E. P. Rivero, F. F. Rivera, M. Cruz-Díaz, I. González. Mass transfer modeling and simulation at a rotating cylinder electrode (RCE) reactor under turbulent flow for copper recovery. Chemical Engineering Science. Vol. 65, page. 3042 (Mayo 2010). ISNN: 0009-2509. Doi:10.1016/j.ces.2010.01.030.