hydrogen peroxide added to the system. An increase in hydrogen peroxide dose ranging from 1 to $10 \text{ cm}^3/\text{dm}^3$ resulted in an increase inCOD reduction up to 10%. The oxidation process was most efficient at a pH from 3.0 to 3.5. The optimum doses of iron and nickel oxide nanopowders were 0.02 g/dm^3 .

References

- Wei J, Song Y, Tu X, Zhao L, Zhi E. Pretreatment of dry-spun acrylic fiber manufacturing wastewater by Fenton process: Optimization, kinetics and mechanisms, *Chemical Engineering Journal* 2013; 218: 319-326.
- Blanco J, Torrades F, De la Varga M, García-Montaño J. Fenton and biological-Fenton coupled processes for textile wastewater treatment and reuse O. *Desalination* 2012; 286: 394-399.
- Perkowski J, Jóźwiak W, Kos L and Stajszczyk P. Application of Fenton's Reagent in Detergent Separation in Highly Concentrated Water Solutions. *Fibres and Textiles in Eastern Europe* 2006; 14, 5(59): 114-119.
- Kos L, Michalska K and Perkowski J. Textile Wastewater Treatment by Fenton Method. *Fibres and Textiles in Eastern Europe* 2010; 18, 4(81): 105-109.
- Goi A and Trapido M. Hydrogen peroxide, Fenton reagent and photo-Fenton for the degradation of nitrophenols: a comparative study. *Chemosphere* 2002; 46: 913-922.

- Arslan I, Barcioglu A and Tuhkanen T. Oxidative treatment of simulated dyehouse effluent by UV and near-UV light assisted Fenton's reagent. *Chemosphere* 1999; 39: 2767-2778.
- 7. Sawyer D, Sobkowiak A and Matsushita T. Metal $[ML_x; M =$ Fe, Cu, Co, Mn]/ hydroperoxide-induced activation of dioxygen for the oxygenation of hydrocarbons: oxygenated Fenton chemistry. *Acc. Chem. Res.* 1996; 29: 409-416.
- Garrido-Ramirez EG, Theng BKG and Mora ML. Clays and oxide minerals as catalysts and nanocatalysts in Fentonlike reactions. *Applied Clays Science* 2010; 47: 182-192.
- Xu P, Zeng GM, Huang DL, Feng CL, Hu S, Zhao MH, Lai C, Wei Z, Huang C, Xie GX, Liu ZF. Use of iron oxide nanomaterials in wastewater treatment. *Science of the Total Environment* 2012; 424: 1-10.
- Bach A, Zach-Maor A and Semita R. Characterization of iron oxide nanocatalyst in mineralization processes. *Desalination* 2012; 262: 15.
- Kos L, Michalska K, Perkowski J. Decomposition of non-ionic surfactant Tergitol TMN-10 by the Fenton process in the presence of iron oxide nanoparticles. *Environmental Science and Pollution Research* 2014; 21: 12223-12232.
- Bach A, Zach-Maor A, Semita R. Characterization of iron oxide nanocatalyst in mineralization processes. *Desalination* 2010; 262(1-3): 15-20.
- Liang X, Zhong Y, He H, Yuan P, Zhu J, Zhu S and, Jiang Z. The application of chromium substituted magnetite as

heterogeneous Fenton catalyst for the degradation of aqueous cationic and anionic dyes. *Chem. Eng. Journal* 2012; 191: 177-184.

- 14. Liang X, Zhong Y, He H, Yuan P, Zhu J, Zhu S and Jiang Z. The application of chromium substituted magnetite as heterogeneous Fenton catalyst for the degradation of aqueous cationic and anionic dyes. *Chem. Eng. Journal* 2012; 191: 177-184.
- Ambashta R and Sillanpaa M. Experimental design of application of nanoscale iron-nickel under sonication and static magnetic field for mixed waste remediation. *Journal of Hazardous Materials* 2011; 189: 167-172.
- Bokare A, Chikate R, Rode C and Paknikar K. Effect of surface chemistry of Fe-Ni nanoparticles on mechanistic pathways of azo dye degradation. *Environ. Sci. Technol.* 2007; 41: 7437-7443.
- Tee Y, Grulke E and Bhattacharyya D. Role of Ni/Fe nanoparticle composition on the degradation of trichloroethylene from water. *Ind. Eng. Chem. Res.*, 44: 7062-7070.
- Nowicki L and Godala M. Advanced Oxidation Processes in the Environment Protection, ed. Polish Academy of Sciences, 2002, Poland. ISBN 83-86492-13-9 (in Polish).

Received 07.09.2015 Reviewed 14.01.2016

III Trade Fair for Technical Textiles Innovatex 2016 Conference

12-13/10/2016, Łódź, Poland

EXHIBITION FACILITIES

Expo-Łódź, Al. Politechniki 4, 93-590 Łódź, Poland

A meeting of business and science in the centre of Poland

Why Łódź:

Łódź is one of the largest cities in Poland, located in the centre of the country.

- It is the Polish capital of the textile industry, with a long tradition dating back to the nineteenth century
- It is a center of modern textile technology
- there are headquarters of scientific research institutes
 It has intellectual and production potential for the textile industry (Lodz University of Technology, Institute of Biopolymers and Chemical Fibers, Textile Research Institute, Institute of Security Technologies MORATEX, Polish Textile Association, Institute of Leather Industry)

FOR MORE INFORMATION PLEASE CONTACT:

Edyta Winiarska - Project Manager

phone: +48 42 633 10 69 mobile: +48 605 672 517 mail: e.winiarska@targi.lodz.pl

see also page 109