TWELFTH ANNUAL CONFERENCE

YUCOMAT 2010

Hotel "Plaža", Herceg Novi, Montenegro, September 6–10, 2010
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Programme
and
The Book of Abstracts

Organised by:

Materials Research Society of Serbia

and

Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade

under the auspices of

Federation of European Materials Societies (FEMS)

and

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TEXTILE DYE SORPTION BY POROUS AMINO FUNCTIONALIZED COPOLYMER

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Macroporous hydrophilic copolymers based on glycidyl methacrylate, GMA, proved very useful as sorbents and column packing in different types of chromatography, as enzyme supports, in biotechnological and biomedical applications, for heavy and precious metal sorption, the sorption of organic compounds, etc. In this paper, macroporous copolymer of GMA and ethylene glycol dimethacrylate, EGDMA, poly(GMA-*co*-EGDMA) [abbreviated PGME] was synthesized by suspension copolymerization. Copolymer was additionally functionalized via ring-opening reaction of the pendant epoxy groups with diethylene triamine [PGME-deta] and tested as acid textile dye sorbent.

The pore size distribution of PGME-deta was determined by mercury porosimetry (Carlo Erba 2000, software Milestone 200). The sorption experiments were carried out in thermostated shaker (Memmert WNE 14 and SV 1422). The samples were withdrawn from the shaker at regular time intervals and the dye solution was centrifuged. The absorbance of supernatant solution was measured. The spectra were obtained using Thermo Electron Nicolet Evolution 500 UV-VIS spectrophotometer and absorption peaks of acid dye was chosen for monitoring of sorption process.

The effect of pH and temperature on sorption efficiency of PGME-deta in removing textile dye from aqueous solutions was studied in order to evaluate this material as wastewater sorbent. Freundlich and Langmuir equations were used to determine the best fit model to correlate obtained experimental results. Kinetic data were treated with pseudo-first-order and pseudo-second-order kinetic models.