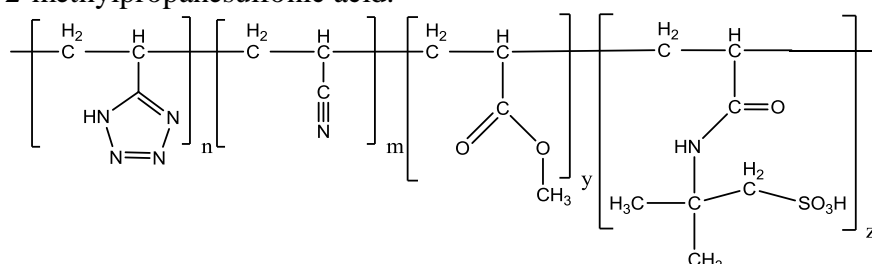


Copper(II) sorption with tetrazolated Nitron D-5 polyacrylonitrile fibre

Y. V. Grigoriev, I. M. Grigorieva, S. V. Voitekhovich, O. A. Ivashkevich

Research Institute for Physical Chemical Problems, Belarusian State University, Minsk, Belarus,
e-mail: azole@bsu.by

Due to coordination ability polymers containing tetrazole derivatives are attractive as a sorbents for isolation of heavy metals from aqueous solutions [1–4]. In continuation of our investigations in the field of synthesis and chemistry of tetrazole derivatives [5] in the present work we studied the possibility of isolation of Cu^{2+} from aqueous solutions using films of polymers prepared by azidation of the commercial Nitron D-5 polyacrylonitrile fibre. Tetrazolation of the initial fibre was carried out using $\text{NaN}_3/\text{NH}_4\text{Cl}$ as azidation agent in dimethylformamide at 100 °C. Obtained polymers present copolymers of 5-vinyltetrazole, acrylonitrile, methyl acrylate and 2-acrylamido-2-methylpropanesulfonic acid.



The content of tetrazolyl moieties varied from ~10 to ~90 % was adjusted by changing the azidation agent : initial polymer ratio.

Films of polymers investigated was found to sorb Cu^{2+} from dilute solutions of $\text{Cu}(\text{NO}_3)_2$. The degree of sorption increased with increasing of tetrazolation ratio (Fig), that indicated a key role of tetrazolyl moiety in the interaction of Cu^{2+} with a sorbent. The adsorbed Cu^{2+} ions were shown to be quantitatively removed from polymer formed by treatment with 0.1 M HCl. Sorbent regenerated were suitable for the further extraction of metal ions.

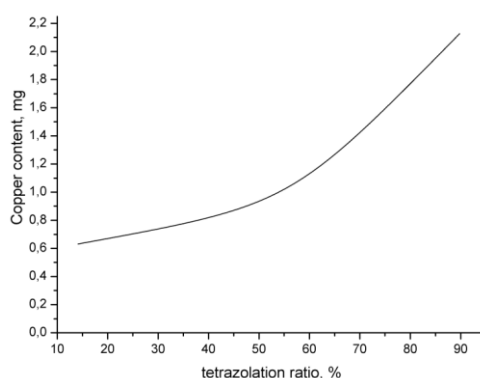


Fig. Dependence of sorbed Cu^{2+} amount vs tetrazolation ratio of sorbent (sorbent – 100 mg, $2.7 \cdot 10^{-4}$ M $\text{Cu}(\text{NO}_3)_2$, 24 h, 20 °C).

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