

## Electron paramagnetic resonance studies on interactions between difunctionalized polymers and copper(II).

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Chelating ion exchangers containing comparable amount of amino groups (ethylenediamine: 2.7–2.9 mmol/g or guanidyl: 0.5–0.6 mmol/g) and different amount of carboxylic groups: 0.3 mmol/g–1.6 mmol/g (formed as a result of ester hydrolysis) attached to methyl methacrylate-glycidyl methacrylate-trimethylolpropane trimethacrylate (MM-GMA-TMPMA) or to methyl methacrylate-glycidyl methacrylate-trimethylolpropane triacrylate (MM-GMA-TMPA) terpolymers were synthesized and characterized. Cu(II)-uptake ability of polymers containing different amino groups (ethylenediamine, guanidyl or amidoxime) and carboxylic groups with various  $\text{-NH}_2 : \text{-COOH}$  ratios was determined for initial concentration of Cu(II) in solution  $[\text{Cu(II)}]_{\text{init}} = 5 \times 10^{-4} \text{ M}$  and  $5 \times 10^{-5} \text{ M}$ . EPR spectroscopy was applied to detect Cu(II) complex formation in the polymer phase as well as competition between particular amino and carboxylic groups for Cu(II) binding by structural identification of the coordination mode of the ligands. The complexes were followed and characterized by analysis of EPR parameters depending on relative content of the particular amino and carboxylic groups in the resins, on the nature of the amino groups and on relative content of Cu(II) for particular ion exchangers. EPR spectral studies provide a unique possibility to observe the complexes in equilibrium and to determine the conditions under which donors provided by the functional groups participate in Cu(II) binding.

### Adres publiczny

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