

Electron parametric resonance (EPR) studies on stable and transient radicals in humic acids from compost, soil, peat and brown coal.

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Streszczenie

Quantitative EPR method was applied to characterise four types of humic acids (HA) derived from composts, soil, peat and soft brown coal. For each sample of HA the level of native (indigenous) radicals was estimated. Interactions of the HA with various gaseous agents and organic solvents were investigated. Strong effects of gaseous ammonia and aliphatic amines on spin concentration enhancement were observed; additionally, higher values of g-value were found to be associated with the formed 'transient' radicals. Correlation of copper(II) ions uptake by different HA with effect diminishing primary spin concentration was established. It was recognised that the radical centres, which are enhanced by 'ammonia effect' are quenched in the formed HA-Cu(II) complexes. The both opposite effects are competitive from each other, where 'copper(II) quenching effect' prevails. Reaction of nitrogen dioxide with the humic acids was also examined. The presence of diketones and/or other compounds with active methylene group results in formation of the iminoxy radicals; these radicals are immobilized in the solid (macromolecular) matrix of the humic acids.

Słowa kluczowe

Humic acids, EPR, Free radical, Humic acids-copper(II) complex, Semiquinone radical, Iminoxy radical

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