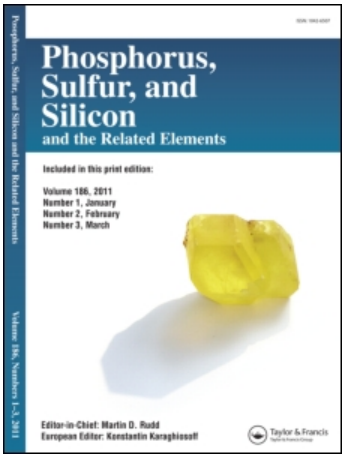

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NMR and ESR Investigation of Some Phosphorus Organic Compounds and their Free Radicals

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NMR and ESR Investigation of Some Phosphorus Organic Compounds and their Free Radicals

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The new methods of NMR and ESR spectroscopy are developed for investigation of the properties and the character of intramolecular interactions for three and four coordinated phosphorous containing compounds. Analytical dependences of direct, geminal and vicinal constants of spin-spin coupling in NMR spectra upon geometrical parameters of molecules of the P=O, P=S, P=Se orientation for the cyclic phosphorous compounds are established.

Saturation-transfer method between two exchanged states successfully used for study of dynamic processes-tautomeric rearrengement-for five membered monocyclic phosphorans with an acyl group. Activation parameters of the exchange processes were determined.

E,Z-izomerism of phosphorylated oximes is established by means of NMR of ^{1}H, ^{13}C, ^{31}P spectroscopy. Stereospecifity phosphorus-carbon spin coupling is considered to be suitable criteria for distinction of spatial isomers.

The new type of phosphorus iminoxy free radicals was generated from these oximes. They're shown to exist in two stable syn- and anti-isomeric states with different hyperfine coupling a^{P} and g-factors. Spin distribution depends on the electronic properties of phosphorus environment as well as the type of solvent.