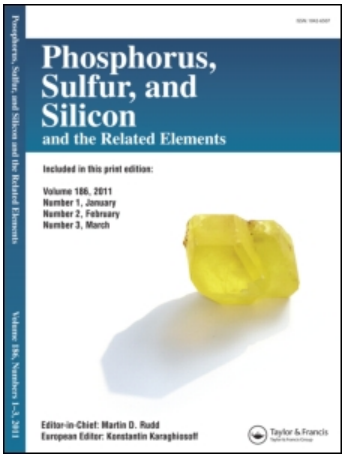

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One- and Two-Dimensional ^{31}P NMR Studies of Some Phosphorus Sulfides in the Liquid and Solid State

Thomas Bjorholm[a]
[a] A/S Cheminova, Lemviq, Denmark

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ONE- AND TWO-DIMENSIONAL ^{31}P NMR STUDIES OF SOME PHOSPHORUS SULFIDES IN THE LIQUID AND SOLID STATE

THOMAS BJORHOLM
A/S Cheminova, P.O.Box 9, 7620 Lemvig, Denmark

The phosphorus sulfides of the type P_4S_n ($3 \leq n \leq 10$) exhibit a fascinating variety of structures with different molecular symmetries and crystal structures and the simplicity of the compounds combined with the 100% natural abundance of ^{31}P (undiluted spin) makes these compounds ideal for studying the behaviour of the molecules in the liquid and solid state by NMR spectroscopy.

In the poster we present 1-D and 2-D ^{31}P magic-angle spinning (MAS) NMR spectra of different phosphorus sulfides. The spectral parameters determined are discussed and compared with those of related compounds studied in the liquid state.

The crystalline-to-plastic phase transition that α-P_4S_3 undergoes at 314°K has been studied by MAS NMR. Below the transition temperature the spectrum agrees with the single crystal spectrum obtained by Gibby et al.[1], whereas above 314°K the spectrum is almost identical with the isotropic spectrum in CS_2 solution.

1 M.G. Gibby, A. Pines, W.-K. Rhim and J.S. Waugh, J. Chem. Phys., **56**, 991 (1972).