Molecular Crystals and Liquid Crystals

Lattice Properties of pts as a Function of Polymer Content

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LATTICE PROPERTIES OF pTS AS A FUNCTION
OF POLYMER CONTENT

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Abstract. I. The unit cell parameters of
deuterated pTS have been measured by neutron dif-
fraction from 200 to 300 K and as a function of
polymer content X from $\sim$0 to >95%, and the evolu-
tion with X of the thermal expansion tensor α has
been calculated. The data yield information on
the side groups displacement depending on X, and
on the anisotropy of matrix response to chain
creation.

α_b does not decrease smoothly with X, and shows a
secondary maximum just at the beginning of the
autocatalytic range.

The expansion in the (a,c) plane is maximum around
X = 30% and the corresponding principal axes rotate
by about 20° to become aligned with the perpendicu-
lar to the molecule long axis.

II. The monomer compressibility tensor χ has been
measured. The deformations induced by pressure or
thermally are similar, contrary to the case of the
polymer. This seems to be due to the evolution of
α with X, and may correspond to the decrease of
the side-group libration amplitude in the polymer.