The crystal modulus of poly(hydroxybutyrate) (PHB) has been measured using changes in the X-ray diffraction pattern of oriented samples under stress. Results obtained below the β-transition temperature give a value of 9 GPa. Two molecular modelling packages, BIOSYM and CERIUS, have been used to predict the full matrix of stiffness coefficients for PHB and hence, via the aggregate model, the properties of a uniaxial fibre. The modulus along the chain direction compares well with the experimental value. Both packages predict a high transverse modulus and this is shown to be consistent with the measured moduli of the isotropic polymer on the basis of the aggregate model.

The Biomedical Polymers Research Unit is a network research unit of the National Metal and Materials Technology Center (MTEC).

**Materials IV**

Aperiodic Structures & Incommensurate Phases

**MS10.04.01 X-RAY DIFFRACTION STUDIES ON DIFFUSE SCATTERING IN SINGLE QUASICRYSTALS.** F. Dénoyer, Laboratoire de Physique des Solides, Associé au CNRS, Bâtiment 510, Université Paris-Sud, 91405 Orsay Cédex, France.

