

In this chapter the application of solid state NMR techniques for the investigation of biodegradable polymers which have wide range of applications in various fields have been presented. Among many polymer systems poly L-lactic acid popularly known as PLLA is a biodegradable polymer and has many commercial applications. The utility of this type of polymers in the nature is increased by adding several fillers such as nano tubes, graphite oxide, clay etc to increase its thermal and mechanical properties for long usage. Of these many fillers, polyhedral oligomeric silsesquioxane popularly known as POSS is a well suited composite because of its inherent organic-inorganic frame work. The crystalline and amorphous natures and information of molecular dynamics of these polymers are evident from several 1D experiments. 2D experiments such as HETCOR and R-PDLF techniques provide the information of heteronuclear correlation and distances of proton-silicon nuclei respectively in the PLLA-POSS polymer compound. Hence the structural information can be understood by utilizing these experimental approaches in the polymer systems