Two and Three Dimensional Nuclear Quadrupole Resonance in the Investigation of Structure and Bonding

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A variety of two dimensional two- and three-dimensional NQR experiments are reviewed, showing their application to the determination of field gradients for important sites in peptides and proteins, for assigning connected transitions of nuclei with spin \( \geq \frac{5}{2} \), and for determining hexadecapolar coupling constants. The quadrupole coupling tensor for \(^{65}\text{Cu}\) in the active site of a protein, bovine erythrocyte (Cu, Zn) superoxide dismutase, has been measured and is compared with the results of \textit{ab initio} calculations.