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Poster 13

Application of MQMAS NMR Technique to Inorganic Systems

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When multiple quantum magic angle spinning (MQMAS) technique was first reported by Frydman, people were fascinated by its economic way to get high resolution in quadrupole nuclei spectra broadened by the second order quadrupolar interaction in powder samples. Before the MQMAS technique was developed, dynamic angle spinning (DAS) or double rotation (DOR) experiments were considered to be the best way to average out the second order quadrupole line-broadening interaction. However, for these experiments, a DAS or DOR probe should be purchased. On the other hand, a regular CP/MAS probe is supposed to be used for MQMAS experiments. Magnetic field dependence study or nutation experiments could be considered as other choices to interpret the spectra broadened by the second order quadrupolar interaction. But carrying out experiments at different magnetic fields is neither convenient nor economic and nutation technique is not informative as much as the above four techniques, especially when the peaks are severely overlapped.

In this presentation, an application of MQMAS technique to the intermediate transformation material from kaolinite to mullite will be reported. Instrumental requirements and experimental aspects of MQMAS techniques will be also discussed.