

Design of Solid Polarization Matrixes for Efficient Dynamic Nuclear Polarization

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Dynamic Nuclear Polarization (DNP) can efficiently enhance NMR signals by several order of magnitudes, both in solution (dissolution DNP – several 10'000) and in the solid state (solid-state DNP at 100 K – several 100). DNP relies on the efficient transfer of polarization from polarized electrons to NMR active nuclei, and it can be carried out using homogeneous distribution of organic radicals within a glassy matrix under microwave irradiation at low temperatures. However, one of the great challenges often remains to obtain adequate formulation and to generate reproducible glassy matrixes. This presentation will thus focus on the development of efficient hybrid organo-silica materials towards efficient DNP at low temperatures.

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