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Neutron Scattering at the McMaster Nuclear Reactor: Past, Present and Future

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The McMaster Nuclear Reactor is a 5 MW nuclear reactor, which is now the only source of neutrons in Canada capable of supporting a neutron scattering program. In the past, its contributions to Canadian neutron beam science have been modest, largely due to the preeminent role played by in this area by the NRU reactor at the Chalk River Laboratories. Nonetheless, it has a distinguished history of contributions in both education and materials research. Bert Brockhouse and his students built one of the early triple axis spectrometers on beam port 6 after his arrival at McMaster in 1962, while Peter Egelstaff (Guelph) built and operated a liquids diffractometer on beam port 5 at around the same time. John Greedan (McMaster) famously built and operated a neutron powder diffractometer which produced the first full chemical structure of the high temperature superconductor YBa2Cu3O7 in the 1980s. Also, in the 1980s John Copley (McMaster, later NIST) built and operated a vertical, small angle neutron scattering instrument which was used to study nanostructure in materials throughout the late 1980s and 1990s. These successes have set the stage for a new suite of neutron diffraction instruments put forward in the "Building a Future for Canadian Neutron Scattering" proposal currently being developed.

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