Brochure „Internationale Forschung mit Neutronen
Experimentier- und Forschungseinrichtungen am FRM-II“

Preface
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The growth of Garching from village to university town began in 1957 with the construction of Munich’s well-known egg-shaped research reactor. The research carried out at the Garching “Atomic Egg” established its reputation worldwide. The Garching site proved seminal for the technical and scientific activity centred around Munich. The faculties of physics, chemistry and mechanical engineering have already relocated, with the mathematics and computer science faculties due to follow in 2002.

Given this background, it is difficult to come up with incentives to encourage further development of this kind. Modernisation and growth alone are insufficient. Rather, scientific efforts must focus on modern, global problems and important interdisciplinary areas need to be opened up.

The New Research Neutron Source FRM-II on the Garching research campus is thus of central importance. FRM-II derives its significance as a European centre for neutron physics and as a magnet for science, technology, medicine and commerce from its optimised design and its existing skills set. However, full benefits will only be obtained in conjunction with on-site resources and once the reactor comes to be regarded as a European research facility.

The Technische Universität München (TUM) expects the final operating licence for the commissioning of FRM-II to be granted soon. In the near future we hope to begin operation for routine and scientific research purposes.

FRM-II’s instrumentation is strongly oriented towards interdisciplinary activities. Subjects which cross disciplinary boundaries, such as molecular life sciences, medical technology, materials research and microsystems technology, which are an integral part of the curriculum at TUM, will thus be provided with valuable support. Technological innovation will thrive as a result of commercial use of FRM-II and its effect as a magnet for high-tech companies, which will benefit from the services and knowhow transfer provided by FRM-II. The service facilities provided by FRM-II will cater for all particular needs.

The acronyms REFSANS, TOF-TOF, PANDA, which are wholly incomprehensible to the lay-person, denote the first-generation instruments introduced later in this brochure. The reader will very quickly sense the genuine enthusiasm for neutron physics. An uncharged particle with magnetic moment contributes to basic research in the field of standard physics; as if created especially for the purpose, the neutron is used as a probe in researching the structure and dynamics of condensed material;

silicon is transmuted into phosphorus; high-sensitivity analytical methods are made possible; tumour tissue can be selectively destroyed; and transmission and scatter methods allow the development of new materials and new workpiece testing methods. All these experiments and applications are possible only at a high-performance source such as we are establishing in Garching.

I hope that the reader will benefit greatly from reading this brochure and wish the instrument constructors and the experimental scientists much pleasure and scientific gain from their work - may the orchestration of FRM-II bring success and harmony!

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