

## **Budapest Neutron Centre**

The Budapest Research Reactor (BRR) went critical in 1959. It is one of the most significant research infrastructure in Hungary and Central-Europe. The reactor operates at 10 MW power which corresponds to a Thermal flux of 2.5×10<sup>14</sup> n/cm<sup>2</sup>s and Fast neutron flux of 1×10<sup>14</sup> n/cm<sup>2</sup>s in the core. The reactor has eight radial and two tangential beam ports and nearly all of them are constantly in use. Altogether thirteen instruments serve everyday user needs in the reactor hall and in Guide Halls No. 1 and 2. The BRR is operational around 3500 hours per year. The scientific utilization of the research reactor is coordinated and managed by the Budapest Neutron Centre (BNC), which is a consortium founded in 1993 and consists of several research institutions of the Hungarian Academy of Sciences.

The BRR has been utilized as a neutron source for basic and applied research and various industrial and medical applications. With the 13 experimental stations, BNC is the focal point of neutron based research in the field of physics, chemistry, biology, materials science, engineering and archaeology. BNC's research facilities and instruments are available to researchers through an international user program.



- PSD Powder diffractometer
  MTEST Diffractometer
  RAD Thermal-neutron and X-ray imaging
  GINA Neutron reflectometer with polarization option
  SANS Small angle poutron scattering diffractometer
- 5 SANS Small angle neutron scattering diffractometer
- 6 PGAA Prompt-gamma activation analysis

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## **NEUTRONS FOR BUILDING A CAR!**

Imaging of automobile engine system components / Radiography (3)

Identification of structure and microstructure / **Diffraction (1)** 

Characterization of the internal structure of dense-porous materials / SANS (5)

Visualization of oil flow in an engine operating at high speed / Tomography (3)

**Composition analysis** of tires / PGAA (6)

Surface analysis /

**Reflectomerty (4)** 

Investigation of polymer

composites /

SANS (5)

residual stress /

Structure study of super alloy and steel components / Diffraction (1, 2)

Measuring Diffraction (2)

> Identification of the internal stresses and irregularities/ Diffrcation (2)

Investigation of surface

rourghness / SANS (5)

Measuring the thickness of soot in the exhaust pipes and the location of ash deposits / Tomography (3)