



# JRR-3 Users office

文部科学省 先端施設研究施設共用促進事業  
「研究用原子炉JRR-3の中性子利用による施設共用促進」

Promotion of neutron application as a cutting-edge research & analysis tool



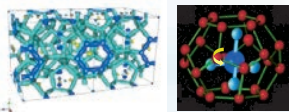
## The Research Reactor JRR-3



**JRR-3** (Japan Research Reactor-3) is a light-water moderated and cooled pool type reactor with a thermal output of 20 MW utilized for various neutron beam experiments and neutron irradiation. For neutron beam experiments, 19 instruments owned by JAEA and 14 instruments constructed by universities are in operation. These instruments are used for structural determination of crystals and proteins, dynamical studies of materials, radiography, residual stress measurements, prompt gamma-ray analysis, etc. Most instruments are open to general users through “the JAEA Common-Use Facility Program” or “the Inter-University Research Program”. More than **600** proposals were accepted and about twenty thousand users visited JRR-3 in FY2010.

## Researches and Applications with Neutrons @ JRR-3

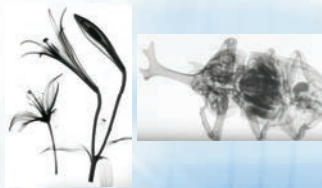
### Neutron scattering



Crystal structure of methane hydrate and rotational mode of methane molecule inside the cage

The information on detailed atomic arrangements, dynamics, strain inside materials can be obtained through neutron scattering. Targets of neutron scattering includes wide research field such as High-Tc superconductor, magnetic materials, polymer, biomaterials, and so on.

### Neutron radiography

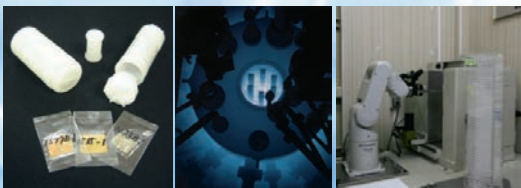


Neutron Radiographs (Left: lilies. Right: unicorn beetle.)

Neutron radiography (NR) is a nondestructive inspection technique. Since neutrons can strongly penetrate most of materials and are quite sensitive for hydrogen, NR is very good at observation of hydrogen-rich materials (e.g., cement, plants, etc.), machines (e.g. motion of car engine, etc.), and so on, which is very difficult with X-rays.

### Elemental analyses

Neutron Beams are irradiated to samples, then the activated elements in the samples are identified by radiation analyses with quite high sensitivity. Microassay is possible.



Samples Neutron Radiation Radiation Analyses

### User Support

Preliminary consulting, experimental supports in human resources, using visitors room during experimental time with internet connection are available. Please contact us in advance to receive these services .



Counseling Office



Visitors room

## Procedure

- Call for Proposal  
For *standard* proposal: twice per year ( May and November )
- User guide and support  
user guide : Please visit our web site “JRR-3 Users Office”  
<https://rrsys.tokai-sc.jaea.go.jp/sentan/>  
user support : liaison and technical staff will support proposal submission and experiment, respectively

## Transmitting information

- Useful information for using JRR-3 can be obtained through website of JRR-3 user office, pamphlet. We also offer consultation service and visit. If you have any questions, just feel free to contact us by telephone, e-mail.



Website



pamphlet

## Contact

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- MEXT Information for JRR-3 : <http://kyoyonavi.mext.go.jp/facility/show/72>

