

# Radiation Research Center

Research Organization for University-Community Collaborations  
Osaka Prefecture University

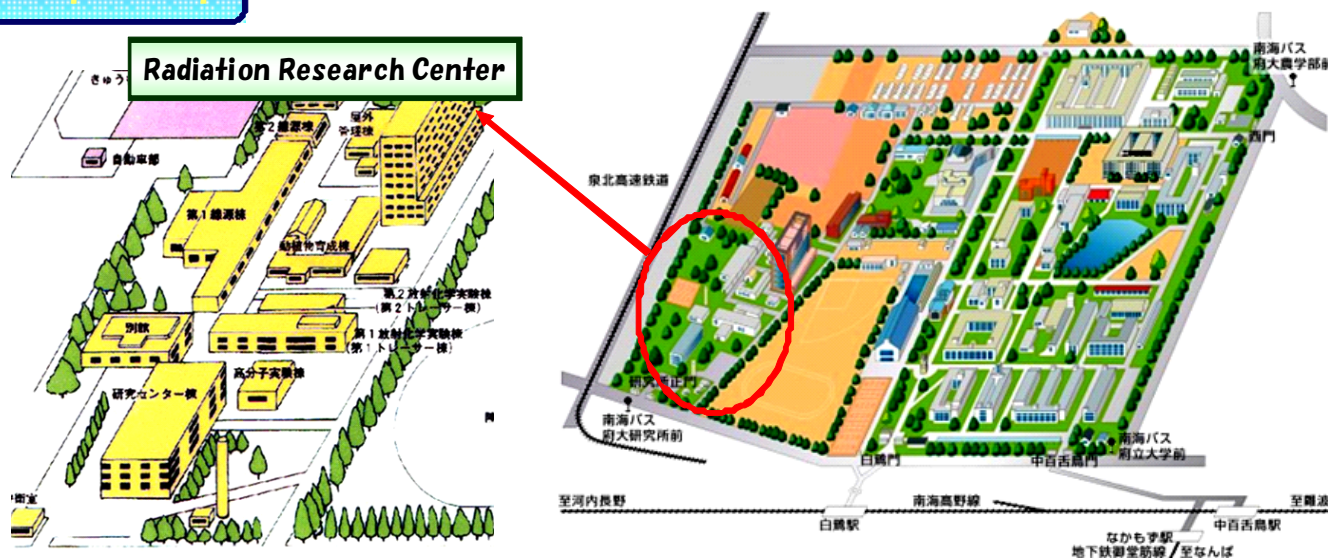
Radiation Research Center of Osaka Prefecture University has large-scale radiation facilities such as cobalt-60  $\gamma$ -ray sources, a 16 MeV electron linear accelerator, and laboratories for handling radioisotopes. This center has a long history and is one of the largest radiation research center in Japanese universities. Those are open for many users in universities and industries.

## History

- 1959 Radiation Center of Osaka Prefecture (RCOP)
- 1962 Installation of RCOP electron linear accelerator
- 1990 Research Institute of Osaka Prefecture Univ. (OPU)
- 1995 Research Institute for Advanced Science and Technology
- 2005 Radiation Research Center of Organization of U-I-G Cooperation
- 2011 Radiation Research Center in Research Organization for University-Community Collaborations



## Campus Map



# Gamma rays

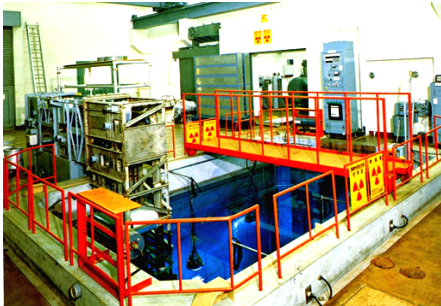
## Cobalt 60 $\gamma$ -ray irradiation facilities (for high dose rate, multi-purposes)

### [Radiation chemistry, reforming]

electronic cables and CD packages  
musical instruments  
radiolysis and products

### [Testing, examination]

electronic parts and devices  
devices in nuclear power plants  
robots, optical parts, detectors and cables  
electronic devices in artificial satellites



Water pool for Co 60  $\gamma$ -ray irradiation



Cherenkov radiation  
from  $\gamma$ -ray sources

### [Biological effects]

mutation, sterilization

### [Examination]

radiation detectors  
radiation dosimeters

### [Coloring, excitation]

coloring of glass, pearl, jewel  
chronological applications

### [Accelerator technology]

development of accelerator  
components

### [Ultra-low intensity electron beams]

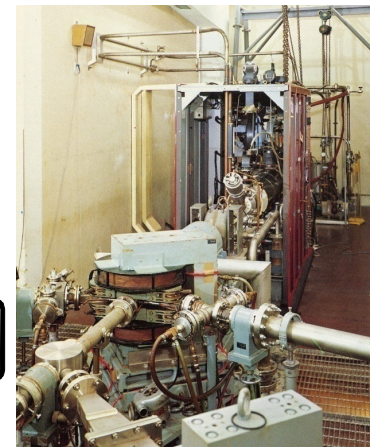
development and applications to highly -  
sensitive radiation dosimeters, advanced  
measurement and biology

### [ns-ms pulse radiolysis]

transient phenomena induced by  
radiation

### [Intense THz light source]

THz radiation from electron beams



OPU electron linear accelerator  
(linac)

### [Electron radiography]

non-destructive inspection  
ozone explosion in liquid nitrogen

### [Low-energy electron irradiation]

surface reformation  
electrification of nano-particles  
introduction of color centers  
defect introduction near the threshold energies

### [Radiation effects]

development of radiation  
tolerable materials

# Electron beams

# Radioisotopes

## [ Radiation measurement ]

elementary analysis  
age dating  
examination of radiation detectors

## [ Radiation chemistry ]

chemical reactions and the behavior  
of radioisotopes

## 標識化合物



## [ Radiation safety management ]

environmental monitoring  
radiation protection

## [ Tracer experiments ]

labeled compounds  
autoradiography  
metabolic research

## [ Positrons ]

radiation damage in materials  
methods for analysis

## Radiation facilities and accelerators

### Radiation sources

Co 60  $\gamma$ -ray sources ( $4 \times 10^{15}$  Bq,  $10^5$  Ci)

4 irradiation rooms and a water pool

### Electron accelerators

16 MeV electron linear accelerator (OPU linac)

600 keV Cockcroft-Walton electron accelerator

100 keV electron accelerator

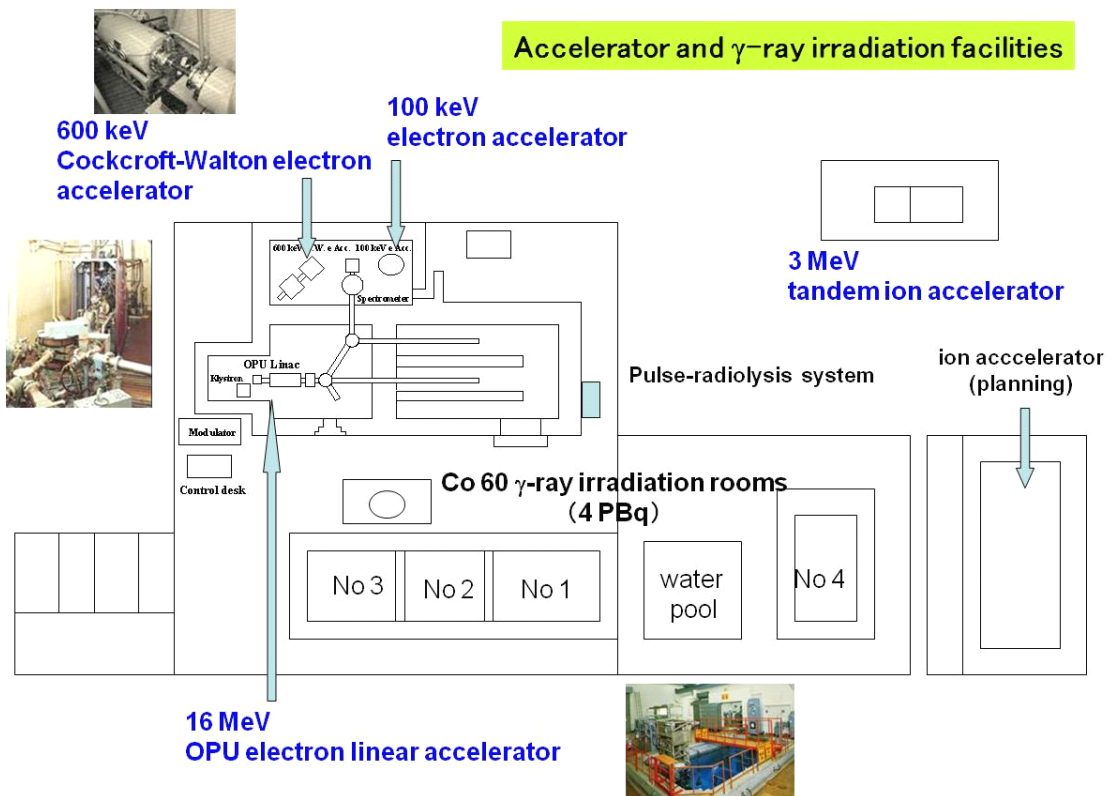
### Ion accelerator

3 MeV tandem ion accelerator

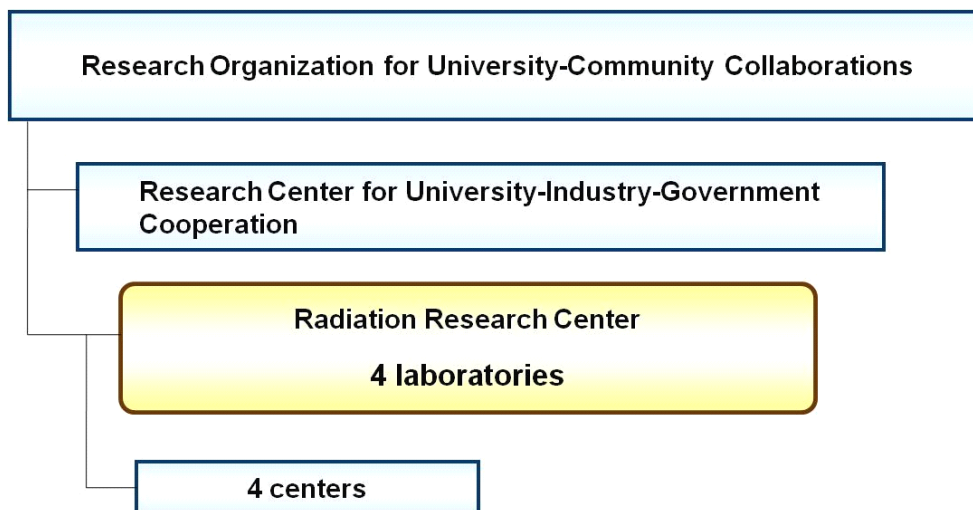
### Radioisotope handling facilities

### Devices for analyses and measurements

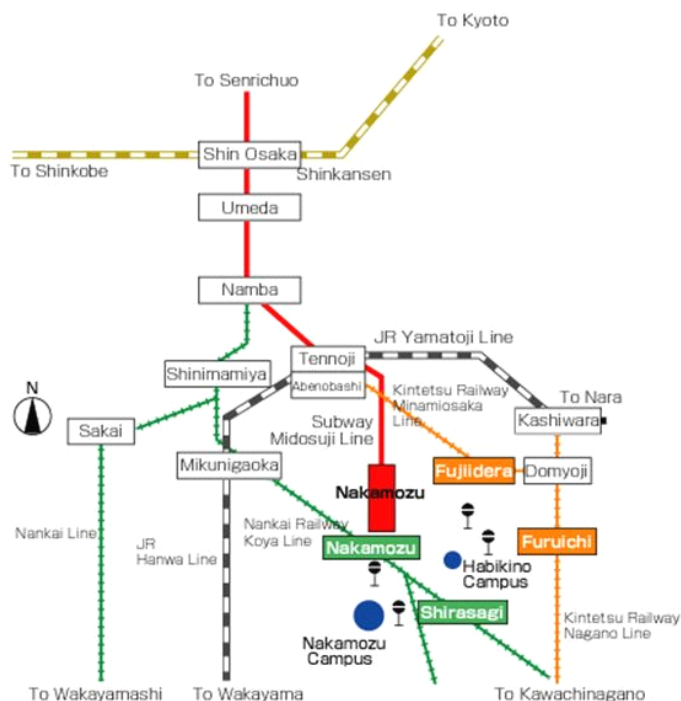
## Accelerator and $\gamma$ -ray irradiation facilities



## Organization



## Access



### Radiation Research Center

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