

## 6-1 Advanced Basic Research to Create the Future

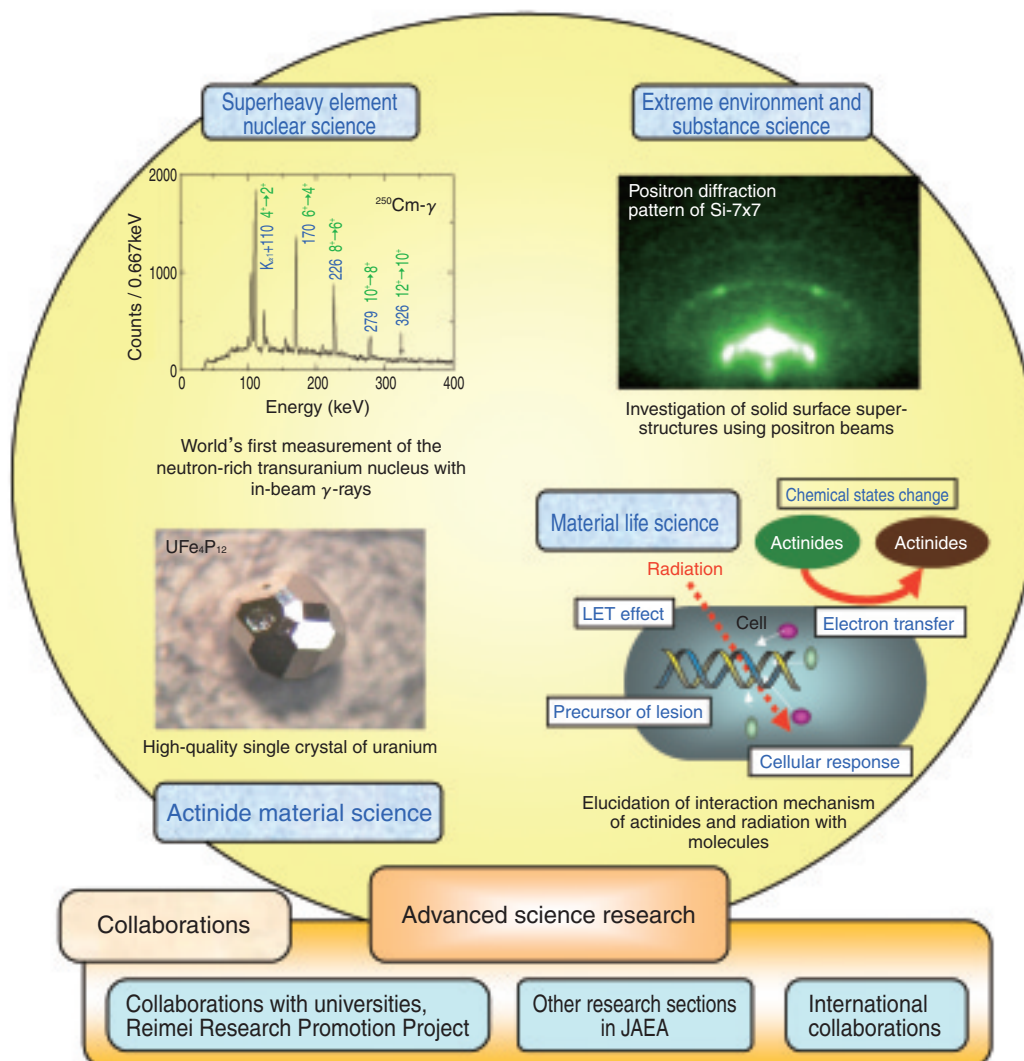


Fig.6-1 Four research fields in Advanced Science Research Center

In the Advanced Science Research Center, new frontier research of nuclear energy and ionizing radiation in the future is conducted to discover new principles and phenomena, and furthermore to create new materials and technologies. In order to achieve these aims, we have four basic policies; (1) to pursue research for which the high level research capability (researchers and facilities) in JAEA is effectively used and which is difficult to do in other research organization, (2) to achieve results ahead of the rest of the world, (3) to nurture a new basic research area until it becomes fruitful, (4) to explain and apply the research, thus fulfilling our responsibility to society, in conformity to the Third Science and Technology Basic Plan.

The following research is going on: nuclear physics and nuclear chemistry of superheavy element, the nuclear shell structure, reaction dynamics and electrochemistry using heavy-ion beam of accelerator; synthesis of uranium and transuranium compounds and measurement of their

macroscopic quantities and electronic structure; clarification of magnetic structure, magnetic excitation, and the mechanism of superconductivity by using NMR,  $\mu\text{SR}$ , neutron scattering, and theoretical methods; design of novel materials using mega-gravitation and nano-particle deposition; topmost surface studies using bright and coherent positron beams; study on information transmittance among hierarchical structure in strongly correlated supermolecular systems; elucidation of interaction mechanism of heavy elements and ionizing radiation with cells and molecules by spectroscopy.

In order to promote this research, we are collaborating with other research sections in JAEA and several international collaborations are ongoing. In addition, we accept new research subjects based on public suggestions within the framework of the Reimei Research Promotion project of JAEA.