



# Sagara Lab

## Pursuing Nuclear Safety, Security & Non-proliferation

Laboratory for Zero-Carbon Energy

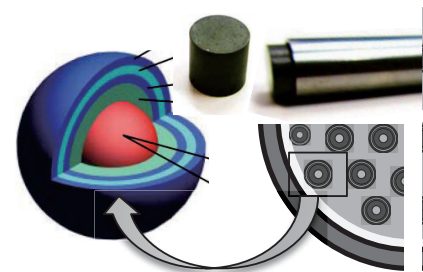
<http://www.zc.iir.titech.ac.jp/~sagara/>

- Studies on robust nuclear energy system against threats to safety, security and non-proliferation
- Non-proliferation science & technology
- Nuclear reactor designing utilizing high level waste material as a valuable fuel

Nuclear disaster may be caused not only by natural disasters or errors, but also by human intentional actions. We are pursuing studies on robust nuclear energy system against threats to safety, security and non-proliferation, especially by system designing.

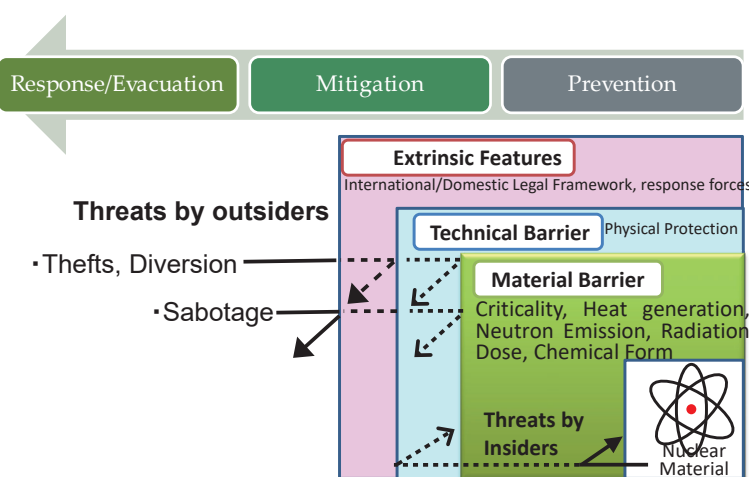
Non-destructive assay technology R&D are being performed to quantify the nuclear material inside fuel debris, with surveillance of nuclear data.

Nuclear reactor designs are performed for waste minimization and harmonization with human society and global environment.



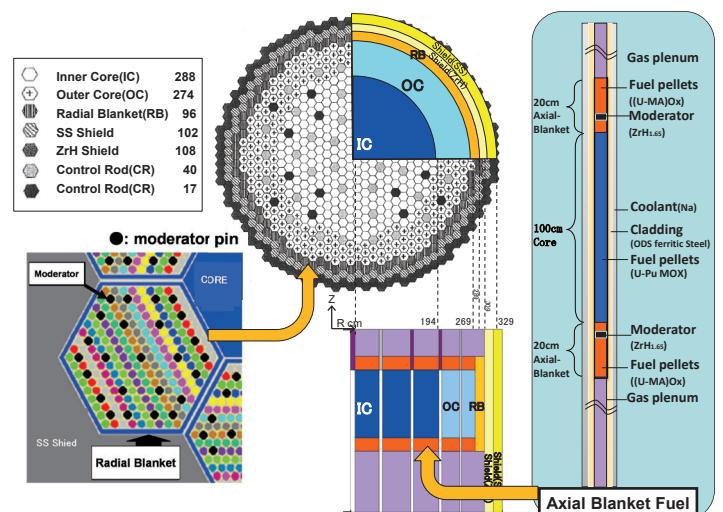
### Robust nuclear energy system against threats to safety, security and non-proliferation

- Multi-threat resistant fuel
- Hydro-Chemical Stability, Containment of FPs
- Inherent safety against multi-threats for peaceful and reliable utilization of nuclear energy



### Defense in Depth in Nuclear Security

- Material Barrier (Decay Heat, Criticality, Fuel design)
- Technical Barrier (Physical Protection System)
- Extrinsic Features (Institutional measures, response forces)



### FR blanket design for waste minimization and proliferation resistance

- Utilizing <sup>237</sup>Np & <sup>241</sup>Am(n,g) reaction
- Controlling isotopic vector of generated Pu during irradiation
- Minimizing the proliferation concerns of Pu