# Radiological Risk Assessment and Communication: Open the Way to Public Acceptance of Geological Disposal

# Ming Zhang[1]; Takeshi Komai[2]

[1] AIST; [2] Green, AIST

The safe disposal of radioactive nuclear waste is currently an urgent and challenging issue in the world. Many countries, including the USA, Sweden, Switzerland, Finland, Germany, Canada, Belgium, France and Japan, have initiated radioactive waste management programs, which now have reached various stages, but only in Finland, the site for the construction of final disposal facility has been decided recently.

Safety assessment and/or performance assessment of facilities associated with geological disposal of high level radioactive waste is complicated and difficult. Many features, events and processes (FEPs) must be considered and appropriately introduced into the models for performance assessment. The assessment, however, cannot be performed deterministically, but with uncertainty, due to the complexity of the problem, heterogeneity and non- homogeneity of natural geological strata, and limitations of experimental technologies.

Public acceptance of geological disposal of high level radioactive waste depends not only on scientific and/or technical bases, but also on political reliability, economic efficiency, social and cultural backgrounds. The authors believe that radiological risk assessment and communication related to all these factors is an effective approach to open the way to public acceptance of geological disposal, and thus for sustainable development and utilization of nuclear energy. Although there has been an increasing awareness of different kinds of risk over recently years, a comprehensive study on radiological risk and communication has not been initiated in many countries including Japan.

In this presentation, we overview the status of radioactive waste management programs in some major countries; discuss key scientific challenges in geological disposal of high level radioactive waste; propose an overall framework for a comprehensive study on radiological risk assessment and communication; illustrate necessary process for radiological assessment; and discuss possible approaches for environmental risk communication.