The project aims to determine the activation energy for thermally induced recrystallization process of iron-bearing metamict phases using ^{57}Fe Mössbauer spectroscopy. Metamict minerals are a class of natural, amorphous materials whose original crystalline structure is degraded by internal radioactive decay over geologic time. Damage in these phases is mainly caused by recoil nuclei from α-decay of ^{238}U, ^{232}Th, ^{235}U and their daughter products. Loss of crystal morphology and structure can obscure the original mineral phase. Allanite, brannerite, cerite, fergusonite, gadolinite, perrierite, samarskite and zircon are good examples of such minerals. The original crystalline structure of a metamict mineral may be restored with high temperature annealing in the presence of an inert gas. Mössbauer-effect spectroscopy is based on recoilless emission or absorption of a gamma-ray from a nucleus in a solid. ^{57}Fe Mössbauer spectroscopy can be regarded as a useful method for investigation of the thermal recrystallization of iron-bearing metamict minerals. Stages of the recrystallization process can be correlated with changes in hyperfine parameters for Fe^{2+} and Fe^{3+} components in the ^{57}Fe Mössbauer spectra. Changes of the amplitudes, distances and half-width ratios for Fe^{2+} and Fe^{3+} quadrupole doublets vs. annealing temperature and annealing time are proposed for determining the activation energy of the metamict phases investigated. The individual activation energy can be determined based on analogy with the first-order or second-order kinetic reactions in solutions. The first successful attempt to determine the activation energy of annealed fully metamict gadolinite based on first-order kinetic reaction annealing model with using ^{57}Fe Mössbauer spectroscopy was reported by Malczewski & Janeczek (2002). The proposed measurements relate to a few dozen metamict species including iron-bearing oxides and silicates. There are no data in available literature relating activation energies of metamict minerals determined directly from changes in a spectroscopic property (properties), during annealing process, whose variability is a function of the activation energy. Metamict phases are proposed as potential nuclear waste matrices and are widely used in geochronology due to natural incorporation of uranium and thorium. The activation energy of a proposed phase destined for geochronology or host matrix should be known because of its association with an increase or decrease in mechanical properties and ionic and defect migration. By analogy to ion beam irradiation experiments the activation energy for natural actinide-bearing minerals represents the energy barrier for recrystallization. The higher the activation energy, the higher is the resistance to recrystallization. Among metamict minerals the activation energies for thermally induced recrystallization were only determined for allanite and zircon using fission track annealing method. Mössbauer spectroscopy is very well suited to studying crystallographic phase transformation and may be applied as an essential and simple method for determining the activation energies of thermally recrystallized metamict minerals, which cannot be determined using other spectroscopic techniques.