**This folder contains files used to calculate chemical equilibria in water-solid-gas type systems on parent asteroid of Ryugu.**

The main operational code is written on Pascal (PTWAR.pas) by Dr. Mikhail Zolotov, Arizona State University. The main code also uses a procedure to calculate chemical equilibria (WR\_SGWS.exe) written by Dr. Mikhail Mironenko (Vernadsky Institute of Geochemistry and Analytical Chemistry, Russian Academy of Sciences).

A Pascal compiler is needed to compile the PTWAR.pas code. T – P – Water/Rock and other conditions to calculate chemical equilibria need to be set in PTWAR.pas for each run at variable or fixed parameters (lines 1235-1307). A 32-bit computer is needed to run the codes (not 64-bit).

Major input information is in WR\_MAT0 file (list and composition of species, bulk elemental fluid and solid composition) and in file with Gibbs Free energies for species (EQ-T-c-c.DAT).

Output data are mainly in GA-A, GA-X, M\_M, M\_V, RES, and RES-FULL ‘OUT’ files.

Contact information: Dr. Mikhail (Misha) Zolotov, E-mail: zolotov@asu.edu