



Chemical and mineralogical data and processing methods management system prototype with application to study of the North Caucasus Blybsky Metamorphic Complexes metamorphism PT-condition

Stanislav Ivanov (1), Vladimir Kamzolkin (1), Aleksandr Konilov (2), and Igor Aleshin (1)

(1) Schmidt Institute of Physics of the Earth (IPE) RAS, Moscow, Russian Federation (f0ma@ifz.ru), (2) Institute of experimental mineralogy (IEM) RAS, Chernogolovka, Russian Federation (chalma@mail.ru)

There are many various methods of assessing the conditions of rocks formation based on determining the composition of the constituent minerals. Our objective was to create a universal tool for processing mineral's chemical analysis results and solving geothermobarometry problems by creating a database of existing sensors and providing a user-friendly standard interface.

Similar computer assisted tools are based upon large collection of sensors (geothermometers and geobarometers) are known, for example, the project TPF (Konilov A.N., 1999) – text-based sensor collection tool written in PASCAL. The application contained more than 350 different sensors and has been used widely in petrochemical studies (see A.N. Konilov , A.A. Grafchikov, V.I. Fonarev 2010 for review). Our prototype uses the TPF project concept and is designed with modern application development techniques, which allows better flexibility.

Main components of the designed system are 3 connected datasets: sensors collection (geothermometers, geobarometers, oxygen geobarometers, etc.), petrochemical data and modeling results. All data is maintained by special management and visualization tools and resides in sql database. System utilities allow user to import and export data in various file formats, edit records and plot graphs. Sensors database contains up to date collections of known methods. New sensors may be added by user. Measured database should be filled in by researcher. User friendly interface allows access to all available data and sensors, automates routine work, reduces the risk of common user mistakes and simplifies information exchange between research groups.

We use prototype to evaluate peak pressure during the formation of garnet-amphibolite apoclogites, gneisses and schists Blybsky metamorphic complex of the Front Range of the Northern Caucasus. In particular, our estimation of formation pressure range (18 ± 4 kbar) agrees on independent research results.

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