

Geology

Determining Structure and Chemical Composition of Rock Samples

Local analysis of large rock samples from the Kola Peninsula was performed. These samples belong to widely spread natural formations Данные образцы относятся к широко распространенным природным образованиям - gneisses (deep metamorphism products). Gneisses are deep-seated rock rather than sediments. They occur in places of orogenic processes, tectonic platforms shift and so on.

Sample 1.

The dark side consists of ferrum oxide - haematite (Fe_2O_3)(stone 2 in the table)

The light side contains calcite (CaCO_3), pyrite (FeS_2), MnCO_3 , and small quantities of other structures (stone 3).

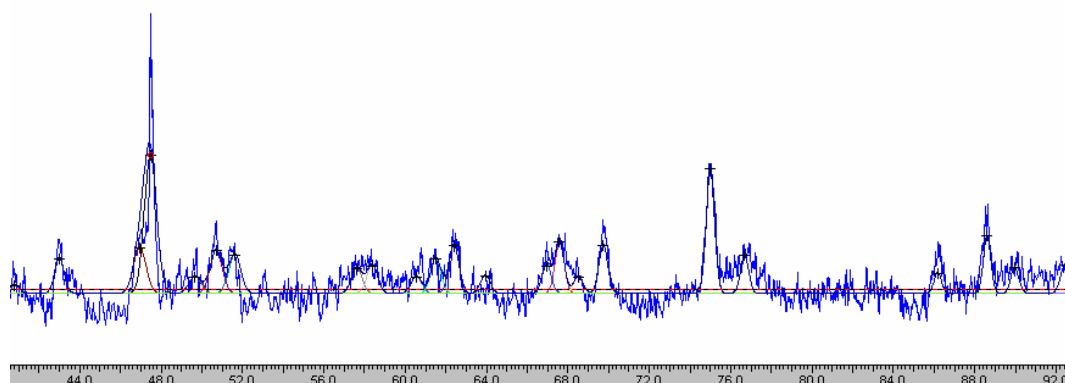
Sample 2

Light veins consist of quartz crystals (SiO_2) (gleaming specks) and feldspar (aluminosilicates – $(\text{Ba,Ca,K,Na,NH}_4,\text{Sr})(\text{Al,B,Si})_4\text{O}_8$)(stone5)

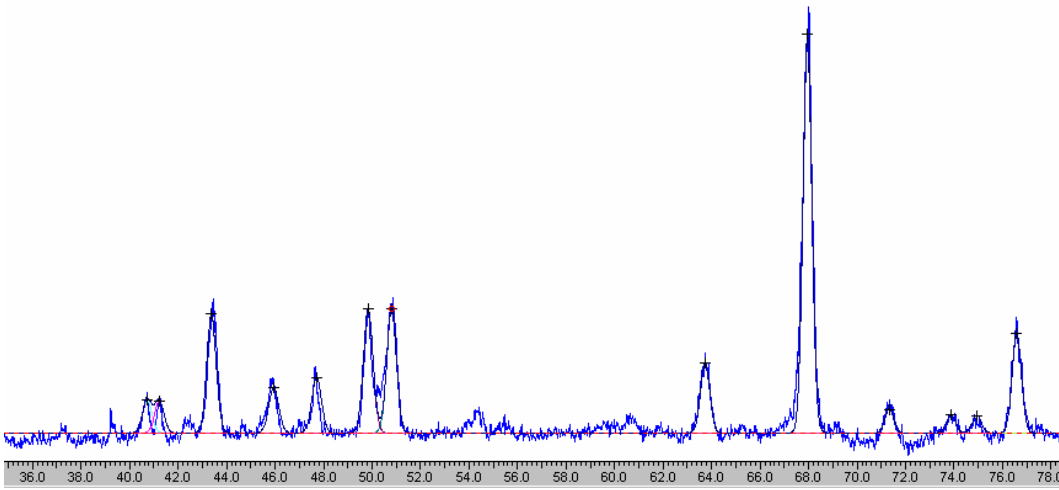
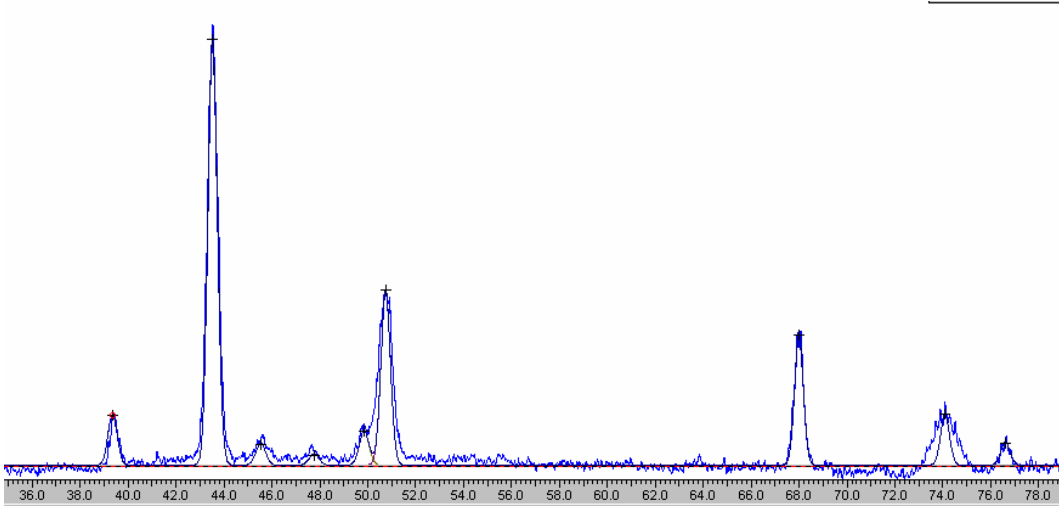
The dark side consists of biotite, muscovite (gleam), pyrite (produces ferruginization – rust), (stone4). Spectral analysis revealed a long list of chemical elements.

	Fe	Mn	Cr	Ti	Ca	K	Si	Zn	Other
stone2	70	1.6	0.8	2.7	1.4	10	10	1.1	rb0.6
stone3	34	3.6	2.8	2.4	18	10	20	4.7	sr3.6
stone4	38	6.7		2	10	9	23.5	5.5	pr5.6
stone5	25	4		2.5	17	13	28	5.7	ce5

The figure shows fragments of diffractogram taken from different parts of the said samples. The area of analysis equals to $0.2\text{mm} \times 2\text{mm}$. Fe radiation is used.



A fragment of diffractogram of the dark side of sample 1.



Fragments of diffractograms with different parts of sample 2.