



# SECONDARY MINERAL FORMATION MONDMILCH FROM BOTOVSKAYA CAVE (EASTERN SIBERIA)

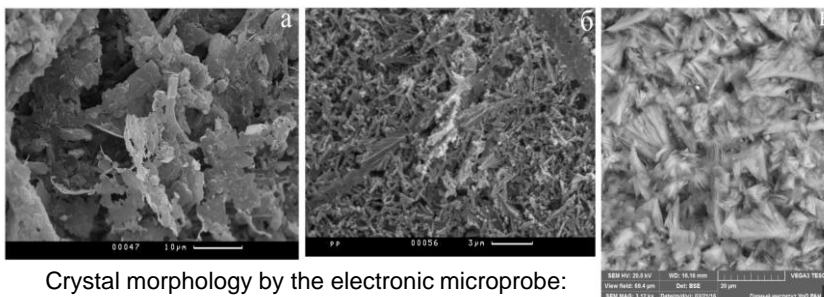
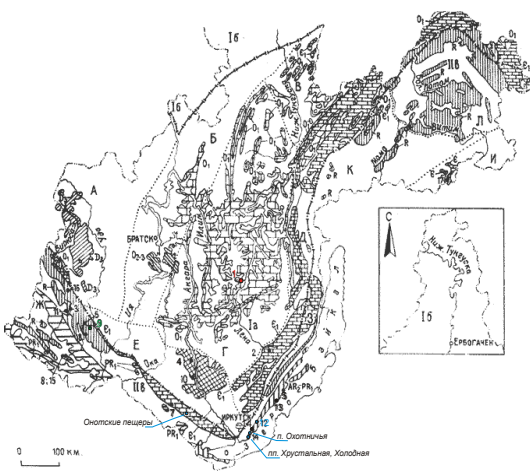
Sholokhova Yu.N., Bazarova E.P., Mazina S.E.  
IGC SB RAS, IEC SB RAS, MSU

Mondmilch, or moon milk, is a special type of speleothems (secondary mineral formations formed in a cave environment from a primary mineral as a result of physical and chemical reactions). This mineral formation is a soft clay-like substance with a high water content, which becomes fluid when touched. In caves, mondmilch is found in the form of covers, leaks, lumps on the walls and on the floor, extensive deposits and small solitary formations.



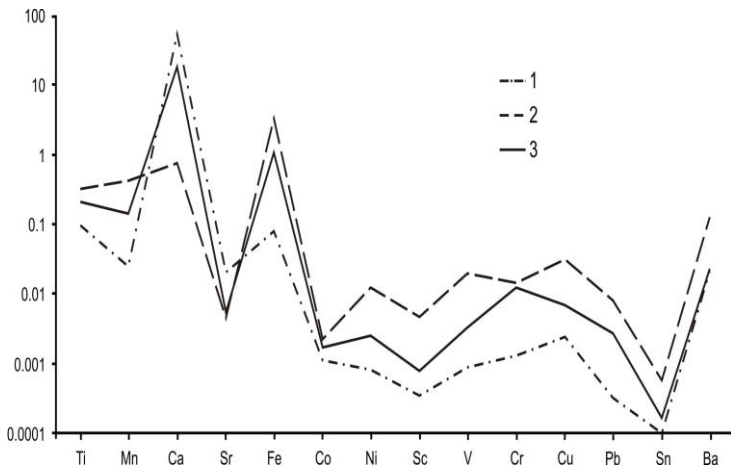
Botovskaya Cave, general view of the tunnel and formations

Scheme of karst-speleological zoning of Irkutsk region by A. Filippov [1993] with additions



Crystal morphology by the electronic microprobe: a - cryogenic calcite powder, b, c - samples of moon milk

The numbers indicate the largest caves:  
1 - Botovskaya, 2 - Argarakanskaya,  
3 - Old Castle, 4 - Balaganskaya, etc.



Concentrations of chemical elements in moon milk, host rocks and clay deposits of Botovskaya: 1 - the average composition of moon milk, 2 - the composition of the clay sample, 3 - the average composition of the host rocks

Using synchrotron radiation, the concentrations of the following elements were determined: Ca, Ti, V, Mn, Fe, Cu, Zn, Ga, As, Br, Rb, Sr, Y, Zr, Mo, Ag. Compared with clark contents for carbonate rocks, in mondmilch, there is an increased content of Ca, Ti, Mn, Ba and lower contents of Sr, Fe, V. The concentrations of the main rock-forming elements in the mondmilch were compared with the concentrations of these elements in the host rocks (only those elements whose content in the mondmilch exceeded 0.01 wt.% were taken into account). It was determined that moon milk is characterized by increased concentrations of Ca and Sr and lower contents of Ti, Mn and Fe relatively to the host rocks. Compared with the host rocks, the contents of Ti, Mn, Fe, Cu are reduced in mondmilch and the contents of Ca and Sr are increased. The content of V varies slightly. The morphology of mondmilch crystals indicates that the genesis of this secondary mineral formation is based on both abiogenic and biogenic mechanisms.