

## **THE IMPORTANCE OF CRYSTAL CHEMISTRY IN THE IDENTIFICATION OF MATERIALS FOR CIVIL ENGINEERING WORKS.**

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The interaction between water, which is going to be handled in hydraulic works, and types of rocks needs special control since dipole water acts as an efficient solvent for ionic compounds owing to its high dielectric constant. These ions, which are present at the surfaces of fresh microfractures in the rocks are going to attract water molecules which, in their turn, are going to remove the material at the surfaces of the fractures, changing the physical characteristics of the minerals involved and saturating the atomic inter - plane spaces, especially those of the clays. In the end, the microfracture will grow in size, to become interconnected with others, permitting the undesirable phenomenon of filtration. The degree of hydration of the ions depends on the surface charge and size of the ion. Those which are on the exposed surfaces and those which are already in solution are going to react. Continual filtrations in the dams in the South of Peru are generating endless over - costs; each year additional work has to be commissioned in order to try and put a stop to these seepages. A combined analysis is proposed: 1) field crystal chemistry; 2) binocular studies; 3) petrography; 4) electron microscopy; 5) x-ray dispersion spectral analysis and 6) X-ray diffraction. With the samples analyzed in a pilot project related to the construction of the new Angostura Dam it has been shown that they all have crystal chemistry conditions which are liable to cause instability as a result of the interaction with the dipole, water.