There is a great demand on faster, smaller, better and energy-saving devices as well as devices that can harvest sunlight and transform it into electric current. To construct such devices, materials are needed that exhibit useful specific physical or chemical properties, for instance efficient emission of light, high absorption of sunlight, ferromagnetism, ferroelectricity or coexistence of magnetic and electric order. Such materials should also be simple and cheap for fabrication. Materials that possess coexistence of magnetic and electric order are called multiferroics and they are of great interest since they enable direct control of the magnetism with electric field. Due to this feature, they might find application as electric field controlled magnetic sensors, memory devices, switches etc. Unfortunately, multiferroics are rare and most of the discovered materials are purely inorganic and often difficult to obtain. There is, however, another way for fabrication of such materials, i.e., synthesis of organic-inorganic hybrid materials that are built of inorganic components, for instance, paramagnetic ions coordinated to oxygen or nitrogen, and organic components. Hybrid organic-inorganic compounds have been the subject of intense studies because their diverse structural and chemical variability offers unlimited opportunities for tuning their physical and chemical properties by chemical modification of organic and/or inorganic part. In multiferroics, presence of inorganic components is responsible for magnetic properties and organic components provide higher structural flexibility. A new promising group of materials exhibiting multiferroic properties are so called dense metal-organic frameworks that contain short organic linkers and small voids occupied by organic cations. Most of these compounds crystallize in a perovskite-type structures. In our project, we have decided to focus on compounds with $H_2PO_2^-$ linkers. A few examples of these compounds (hypophosphites) have been discovered less than two years ago but the reported up to now data show that these compounds exhibit very unusual and interesting properties that makes them promising functional materials. We want to study more deeply three of the known analogues and synthesise a number of novel hypophosphites with various structures and properties by using different organic and inorganic components. We will characterize their structural, phonon, optical, magnetic and electric properties in a broad temperature range. Additional Raman data under high-pressure conditions will also be obtained. We hope that the obtained samples will show unusual interactions between organic and inorganic components as well as interesting properties, including multiferroic ones. Studies of these novel and known hypophosphites will help to answer questions, like how substitution of one building element in the structure by another one influences the crystal arrangement, the bonding forces and the phase transition mechanism. The results will help us to understand relation between structure and properties of this family of compounds, and this information will be useful for rational design of novel compounds with improved physicochemical properties.