

Although organic compounds containing the phosphorus atom in their structure are not unusual in the world around us (see the structure of DNA), compounds known as phosphines are not known to the most of the people in population. These compounds do not occur naturally but they are the products of chemical reactions made in laboratories. There are not in simple everyday use, however, they are extremely important for chemical and pharmaceutical industries. Many drugs, agricultural chemicals or materials for special applications could not be synthesized without phosphines participating in their production process. The fact that in 2001 the Japanese chemist prof. Ryoji Noyori was awarded the Nobel Prize for his research on hydrogenation reaction catalyzed by metal complexes with phosphine ligands can attest about how much they are important.

Phosphines, the same as organic carbon compounds, exhibit a specific feature of the existence as optical isomers which is called chirality. Just like in the case of carbon compounds, the ability to create compounds as separate enantiomers is one of the major efforts taken currently by the researchers studying this subject.

Our project assumes the development of the method of synthesis of chiral organophosphorus compounds which would be applicable for the possibly widest range of transformations, would be available and feasible in almost every chemical laboratory. For their synthesis the so-called chiral auxiliaries will be used, mostly derived from natural compounds (subjected to minor modifications), which are commonly available in large quantities.