This scientific project is dedicated to photovoltaics (focused on converting solar energy into electricity) and organic electronics (focused on constructing 'organic' diodes, i.e. light-emitting devices converting electricity into light). The above mentioned modern fields of science and technology accompany our daily activities, particularly when we use mobile phones, MP3 players, digital cameras and various types of energy sources, or when we look through windows covered with conducting polymers. In order to continuously develop and make use of the devices and technologies, progress in the field of manufacturing new materials (for instance conducting polymers and luminophores) possessing expected properties is necessary. The above mentioned conducting polymers - one of crucial issues of this project - are so called 'synthetic metals', which join the advantages of classic polymers (flexibility, low density, transparence - features well-known to everybody who has experience with food wraps and PET bottles) with electrical conductivity usually associated with metals (e.g. copper wires). Constant technological development requires conducting scientific research, commonly referred to as 'basic research', which one of aims is designing and obtaining new materials and their precursors (chemical compounds) as well as thorough investigation of novel semiproducts and products properties. Such scientific research is multidisciplinary, combining the elements of chemistry, material science and physics. The aim of this project is to obtain a number of appropriately designed chemical compounds possessing a common property (structural feature), which is belonging to donor-acceptor systems. One fragment of the molecules of these compounds is a donor of electric charges (electrons), while the second is their acceptor. This kind of property is fundamental as far as the application of chemical compounds possessing such properties to organic electronics is concerned. It is well known that organic electronics requires using materials playing the role of donors of electric charges and materials playing the role of acceptors of electric charges. One should emphasize that the latest applications seek materials combining both of the above mentioned functions, therefore one material is expected to be both a donor and an acceptor. Such donor-acceptor systems (chemical compounds) will be synthesized, making use of the latest achievements of organic synthesis and catalysis, which belong to the field of science and technology allowing to effectively obtain practically any designed chemical structure. It is planned to make use of the procedures described for structurally similar compounds. However, the project's main objective is to develop new, including catalytic methods of donor-acceptor structure type preparation (belonging to various classes of organic compounds). Afterwards, all the obtained chemical substances (potential donor-acceptor systems) will be thoroughly characterized as far as their physical and chemical properties are concerned, focusing on properties important for predicted application. Knowledge gained as a result of the realization of this project will allow to determine the relation between the structure of obtained compounds and their properties. It will be essential for the future examinations, for instance for making a rational selection of the most promising materials. Thus, the project outcome will be useful for the specialists in the field of chemical technology, material technology and organic electronics, whose intension will be to perform application tests and consequently to design, produce and examine final devices. As for preliminary examination essential to prepare this project, a very interesting donor-acceptor type material, showing a multi-step electrochromism, has already been obtained. This material has a property of multi-step changing its colour, depending on of the value and direction of electrical current flowing through it. Such material can be used for covering sky scrapers windows, which would allow to avoid using classical blinds. A thin layer of such material covering the window surface would be fully transparent, or would change its colour and the degree of light transparency, depending on the voltage.