

Cellulose and nanocellulose surface modification as a method of new materials designing

Cellulose has many biological functions, it can also be used as a functional material in food engineering, pharmacy, medicine, as a component of packaging and construction materials. However, in order to obtain new materials the cellulose surface is modified. There are many methods of modification and functionalization of cellulose and nanocellulose. Most of these methods focus on improving the dispersibility of cellulose in various solvents and compatibility with the polymer matrix. The most frequently used are TEMPO oxidation, polymer grafting or the attachment of functional groups to the surface, eg acetyl, ester, carboxyl or siloxane. Cellulose nanostructures have numerous hydroxyl groups on the surface, which results in their high reactivity. Therefore, the aim of the research would be to develop a new methods for the modification of cellulose and nanocellulose, which would enable to obtain biomaterials with new physico-chemical properties.

Scientific supervisor: dr hab. Monika Szymańska-Chargot, prof. IA PAN, assistant supervisor: dr Monika Chylińska

Candidate:

Master degree in chemistry, biology or related

good command of English (written and spoken) ;

basic knowledge of nanostructures synthesis, methods of surface characteristics, knowledge of molecular interactions, chemical reaction mechanisms and methods of chemical analysis

ability to self-organization of work

scientific achievements, ie. publications, patents, participation in scientific conferences are welcomed

experience in conducting scientific research projects will be an advantage