The mechanism of electrophoretic deposition is a conventional deposition on one of the electrodes of charged particles of chemical substances under the influence of an applied electric field. The charged particles migrate toward the electrode (anode or cathode), and to which the electrode will migrate depends on the type of compound and to what form (anionic or cationic) are present in solution. Electrodeposition has been successfully used to create many unique biological characteristics in terms of biomaterials, and more particularly to the production of coatings, or simply layers, which in some way are intended to give them specific properties e.g. antimicrobial. Through it we can significantly change the nature of our biomaterial surfaces - for example with a slick and hydrophobic metallic surface, we can get friendly for cells (helping them to build up on the surface), the hydrophilic nature of the surface. Unfortunately, the knowledge of the electrodeposition of various types of polymer layers on carriers based on fiber structures is very limited in comparison to ones based of metallic biomaterials. Therefore, I decided to investigate the factors influencing the process of electrophoretic deposition of ultrathin layers of biopolymers for fibrous matrices based on poly (lactic acid), which produces non-woven fabric. The fabric can be a primer for production of dressings, and its form and structure have many advantages for example. flexibility, biodegradability etc. Biopolymers used in the proposed design will be two types of polymers, of natural origin differing in physicochemical properties - water-soluble hyaluronic acid, and insoluble alginic acid. Both have a number of desirable characteristics for their use in surface modification of biomaterials and for use in medicine. Here also we do not have multiple scientific sources for depositing those two biopolymers for various types of media. This means that it is worthwhile to delve into this area to better understand the process of electrophoretic deposition and the opportunities that it brings in the modification of biomaterials based on fibrous structures. The process of electrodeposition is affected by several parameters of the process (voltage, deposition time, temperature) as well as polymer solutions parameters (type of polymer, its concentration, molecular weight). In my case, apart from the above, I shall also examine the impact of fibrous structures surface characteristics (which significantly differs from the homogeneous metal surface) on electrodeposition process and the characteristics of formed layers.