

DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)

The main goal of the project is to carry out research on development of selective methods of bacteria detection in microwave frequency range with the use of microelectronic structures covered by a bacteria binding layers. The precision identification of microorganisms by the development of novel biosensors is a subject of research in many research centres all over the world. The research aims at improvement of detection process, identification of pathogens and replacement of conventional techniques with the novel ones, i.e. by application of innovative biosensors. The novel solutions feature faster detection and simultaneously improve the sensitivity. The development of new techniques based on microelectronic structures will allow in the future for application of biosensors on a broader scale without the need of engaging specialized laboratories with highly-qualified personnel. The proposed research has interdisciplinary character linking the newest achievements in microwave electronics, microelectronics and microbiology. The intention of the project is the innovative utilization of molecules recognizing selective bacteria, e.g. E. coli, which in conjunction with novel solutions of microwave circuits designed in silicon technology enables precise and fast bacteria identification.