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USING BACTERIAL NANOCELLULOSE AS A PLASMONIC BIOSENSOR

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Bacterial Nanocellulose (or BNC) is a promising material for a paper substrate because of its cheap price, portability, smooth surface, mechanical properties, and ideal detection properties. This research project focused on developing a multiplex plasmonic biosensor that could detect multiple artificial antibodies on its surface at the same time. By applying wax “wells” to the BNC surface, solutions dropped onto the BNC could be contained in the sealed region, thus ultimately allowing the separation of different artificial antibodies on the same surface of BNC. A successful multiplexing biosensor would be useful in further applications, as most needs for biosensors must detect multiple biomarkers, such as the urine test for kidney cancer, which detects for three biomarkers. The only complication in this research was the difficulty of immobilizing gold nanorod solution on the BNC surface. While many factors could have contributed to this issue, further research needs to be done to determine the correct factor and method, and thus this research will continue.