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A novel capillary electrophoresis microchip with amperometric detection using a Prussian blue-modified indium tin oxide electrode JU-HO KIM, IN-JE YI, Department of Electrical Engineering, Myongji University, C. J. KANG, Department of Physics, Myongji University, YONG-SANG KIM, Department of Electrical Engineering, Myongji University — A novel approach to construct a disposable capillary electrophoresis microchip is proposed. The electrocatalytic oxidation of dopamine at a Prussian blue (PB)-modified indium tin oxide (ITO) electrode was described and the amperometric detection of dopamine was then investigated. The PB film on ITO electrode was electrodeposited using FeCl3 and K3Fe(CN)6 mixed solution. Our results indicated that PB film was uniform, smooth, and defect-free. The CE-chip has been tested successfully by detecting dopamine and catechol within a very short time of around 80 sec using an electric field of 60 V/cm. The results also showed that dopamine and catechol mixtures were separated efficiently and rapidly. The microsystems gave a very good reproducibility for peak height and separation time. This microchip is cost effective and adequate for a disposable sensor.

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