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A Contactless Capacitance Detection System for Microchip Capillary Electrophoresis PETER WU, Southern Oregon University — The design, construction and operation of a simple, inexpensive and compact high voltage power supply for use in conjunction with a simple cross, capillary electrophoresis microchip is presented. The detection system utilizes a single high voltage power supply (15 kV), a voltage divider network for obtaining the required voltages for enabling a gated injection valve, and two high voltage relays for switching between the open and closed gate sequences of the injection. The system is used to determine sodium monofluoroacetate (MFA) concentration in diluted fruit juices and tap water. A separation buffer consisting of 20 mM citric acid and histidine at pH 3.5 enabled the detection of the anion in diluted apple juice, cranberry juice, and orange juice without lengthy sample pretreatments. Limit of detection in diluted juices and tap water were determined to be 125, 167, 138, and 173 mg/L for tap water, apple juice, cranberry juice, and orange juice, respectively, based upon an S/N of 3:1. The total analysis time for detecting the MFA anion in fruit juices was less than 5 min, which represents a considerable reduction in analysis time compared to other analytical methods currently used in food analysis.

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