Supplementary Information to

In-situ calibration of micro-photoionization detector in multi-dimensional micro-gas chromatography system

Jiwon Lee,[ab+] Menglian Zhou,[ab+] Hongbo Zhu,[ab] Robert Nidetz,[bc]
Katsuo Kurabayashi[bc] and Xudong Fan[*ab]

[a]Department of Biomedical Engineering, University of Michigan,
1101 Beal Avenue, Ann Arbor, Michigan 48109, United States

[b]Center for Wireless Integrated MicroSensing and Systems (WIMS^2),
University of Michigan, Ann Arbor, MI, 48109, United States

[c]Department of Mechanical Engineering, University of Michigan,
2350 Hayward, Ann Arbor, Michigan, 48109, United States

[+]Equal contribution

[*]xsfan@umich.edu

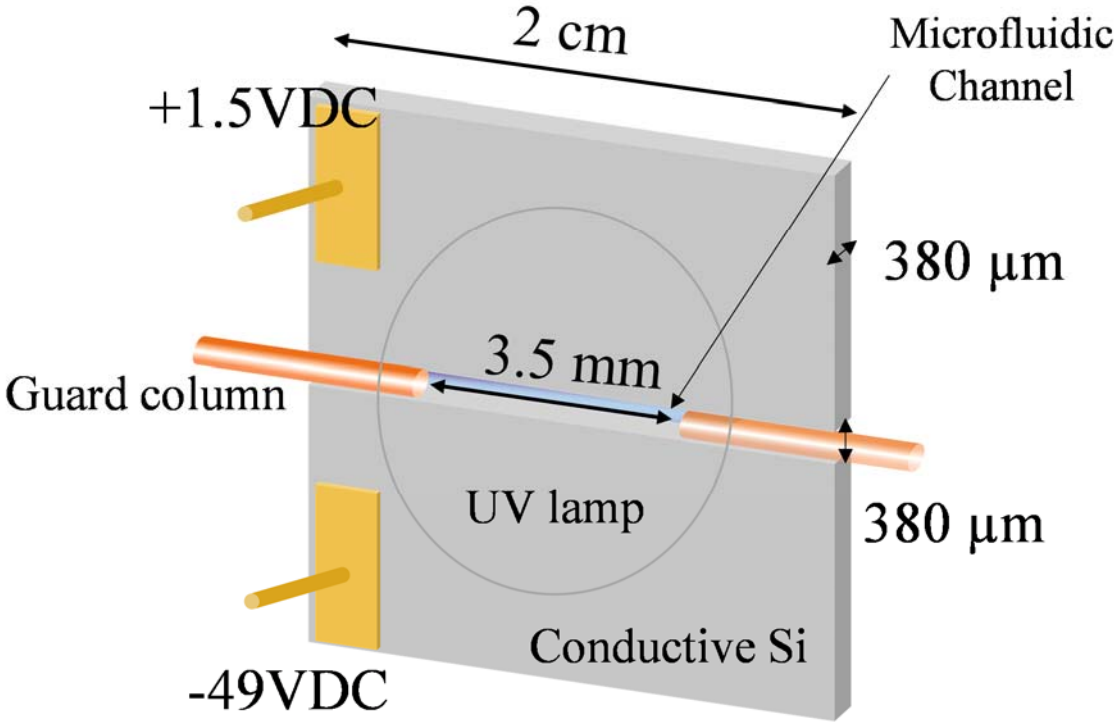

Figure S1. Dimensions and electrical connections of the home-made µPID module. A 380 µm wide, 380 µm tall and 2 cm long microfluidic channel was created by a gap between two conductive silicon wafers. A small segment of a guard column was inserted to the channel inlet/outlet for fluidic connection. The bottom and top of the microfluidic channel were covered by a Krypton UV lamp and a glass slide, respectively, which were then glued to the conductive silicon wafers with an optical epoxy. The UV illumination length was about 3.5 mm defined by the Krypton window diameter. Two copper wires with copper tape were bonded to the wafers and connected to the amplifier.

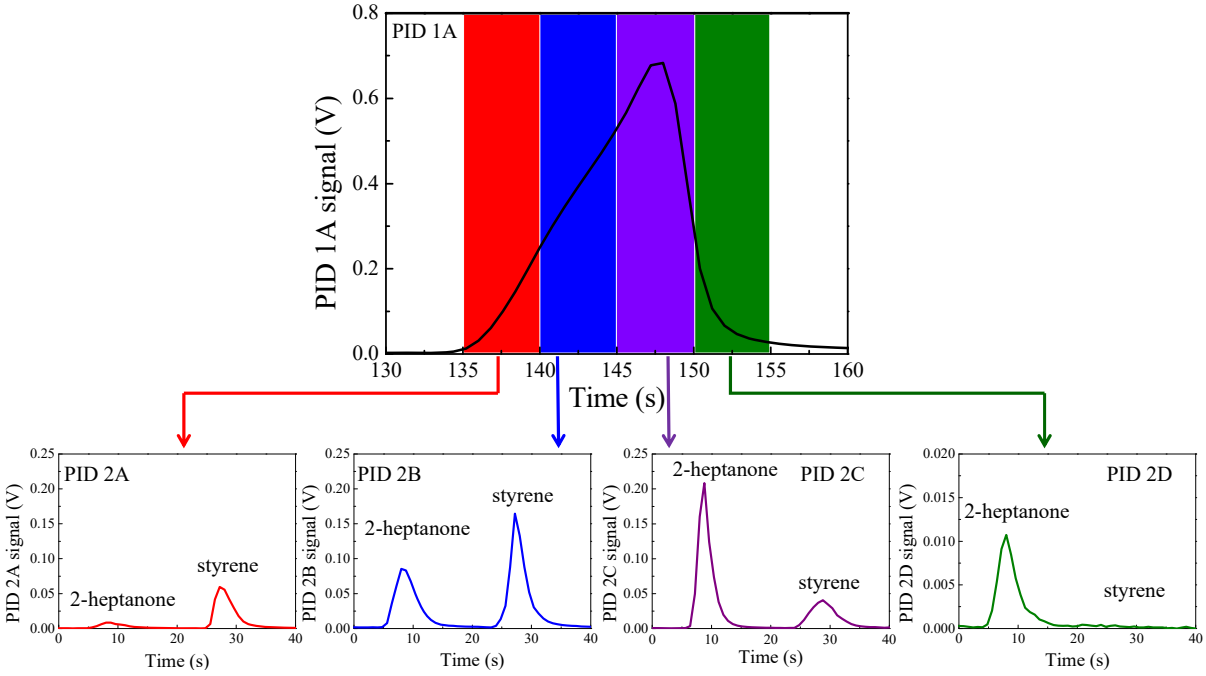

Figure S2. (Top panel) Signal from PID 1A when styrene (285 ng) and 2-heptanone (420 ng) were injected together, showing these two analytes coeluted from the 1st dimension around 145 seconds. The routing system cut the eluent into 4 slices, each of which has a 5-second window, and then sent them sequentially to each of the four 2nd dimensional columns. (Bottom panel) Signal from PIDs 2A-D shows that styrene and 2-heptanone were separated in the 2nd dimensional column, which allowed us to reconstruct the elution peaks in the 1st dimensional separation.