

SUPPLEMENTARY INFORMATION

Characterization of Traveling Wave Ion Mobility Separations in Structures for Lossless Ion Manipulations

Ahmed M. Hamid, Yehia M. Ibrahim, Sandilya V. B. Garimella, Ian K. Webb, Liulin Deng, Tsung-Chi
Chen, Gordon A. Anderson, Spencer A. Prost, Randolph V. Norheim, Aleksey V. Tolmachev and
Richard D. Smith*

Biological Sciences Division, Pacific Northwest National Laboratory, Richland, WA 99352

*Corresponding Author: Richard D. Smith

Phone: (509) 371-6576

Fax: (509) 371-6564

e-mail address: (rds@pnnl.gov)

Figure S-1. (A) Schematic diagram of the TW-SLIM instrumental arrangement showing the dimensions of RF, traveling wave and guard electrodes.

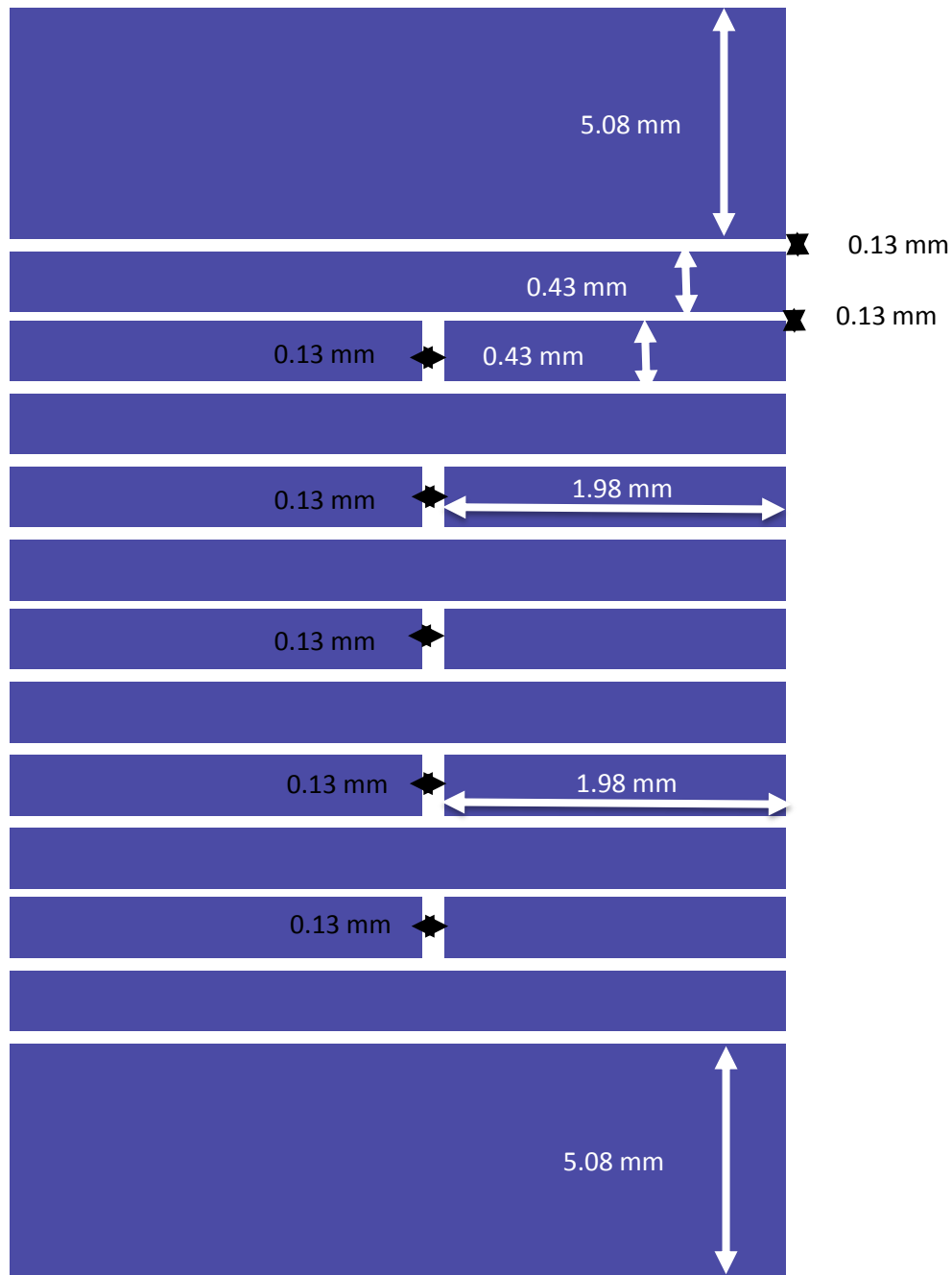


Figure S-2. Agilent Tuning mix analyzed by TW-SLIM module (A) mass spectrum, (B) Nested mass and mobility spectra of the abundant ions analyzed by TW-SLIM module. (C) Arrival time distribution of the ions present in the mixture at the following conditions: traveling wave speed was set to 21 m/s using a symmetric square wave (11110000), traveling wave amplitude was set to 30 V, guard bias was set to 15 V, and RF amplitude (V_{p-p}) was set to 320 V.

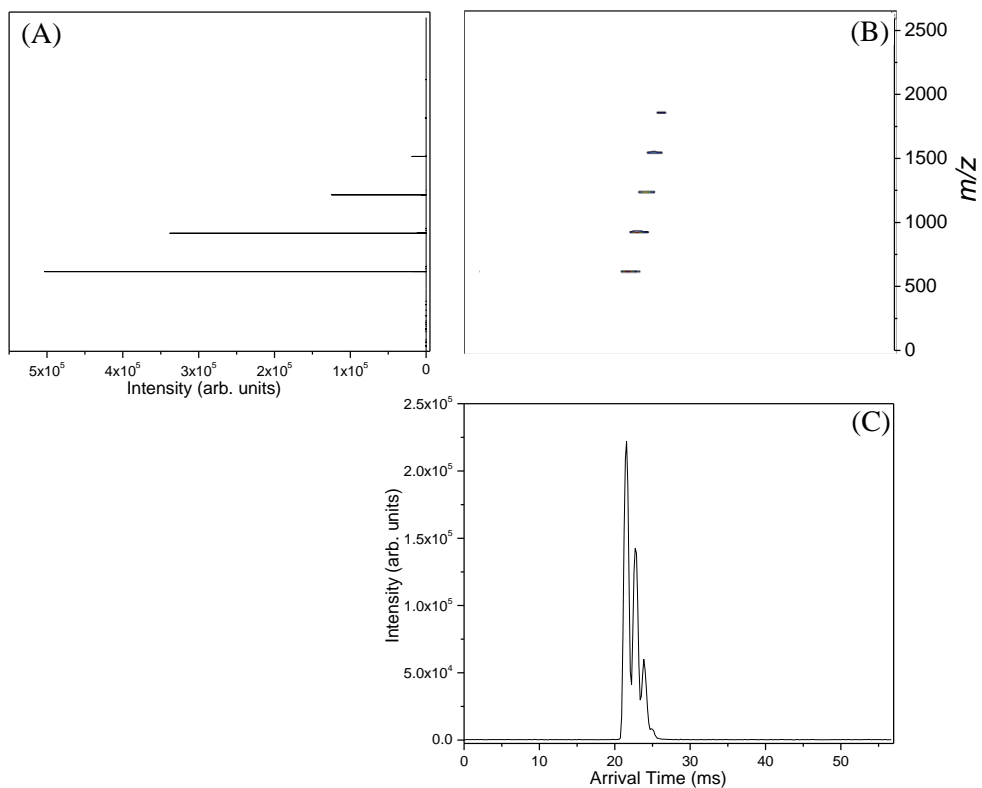
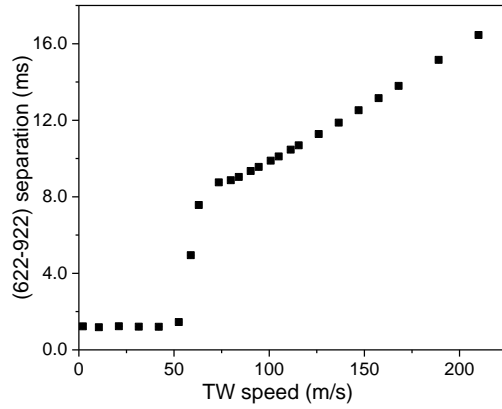
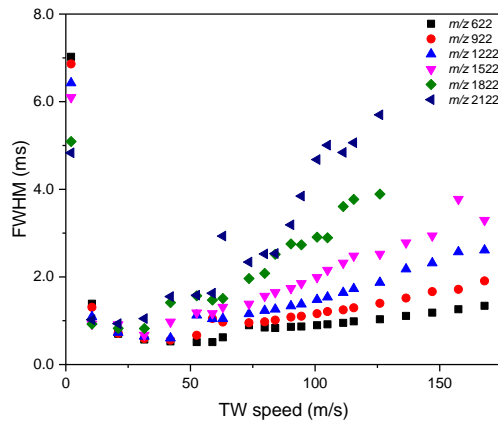


Figure S-3. Agilent Tuning mix (A) Arrival time separation of ions m/z 622 and m/z 922 ions (B) Full width at half maximum (FWHM) of m/z 622, 922, 1222, 1522, 1822 and 2122 ions (C) average full width at half maximum (FWHM) of m/z 622, 922, 1222, 1522, 1822 and 2122 ions and arrival time separation of m/z 622 and m/z 2122 ions measured as a function of traveling wave speed at the following settings: traveling wave amplitude was set to 30 V using a symmetric square wave (11110000), guard bias was set to 15V, and RF amplitude (V_{p-p}) was set to 320V.

(A)



(B)



(C)

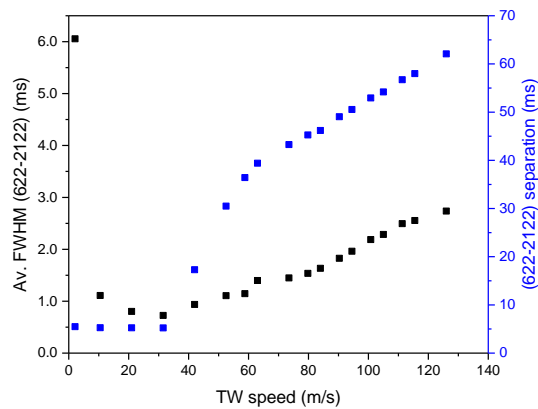


Figure S-4. Resolution for the m/z 622 and 922 peaks measured at 84 m/s as a function of RF amplitude at the following settings: a symmetric square wave (11110000), traveling wave amplitude was set to 30 V, and guard bias was set to 15 V.

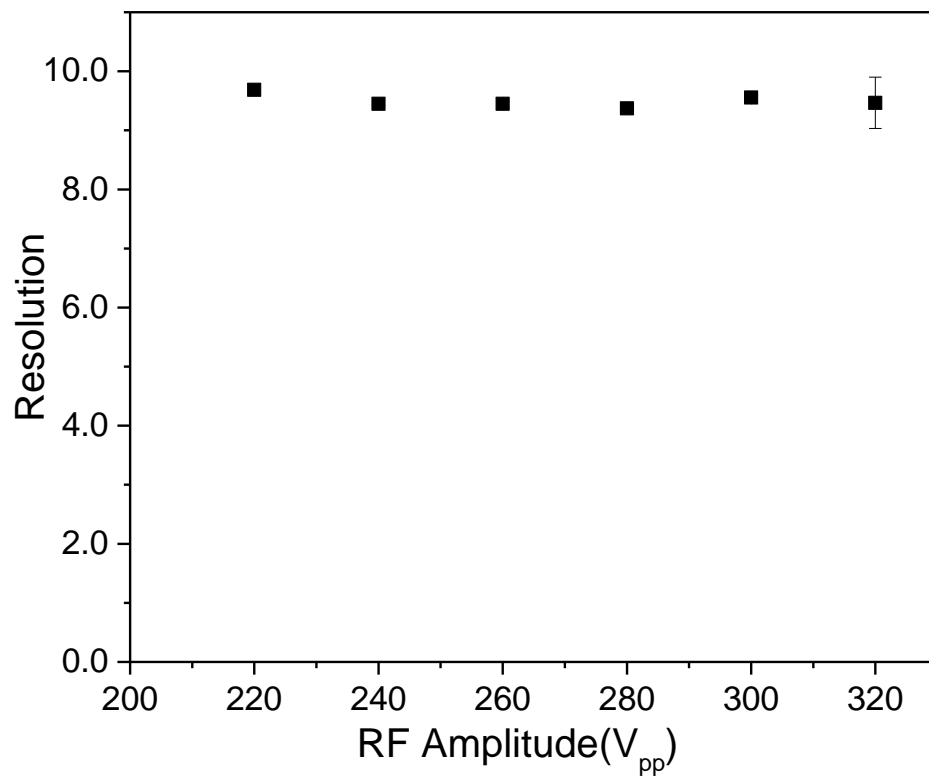


Figure S-5. Agilent tuning mix mass spectra obtained at 84 m/s as a function of RF amplitude at the following settings: a symmetric square wave (11110000), traveling wave amplitude was set to 30 V, and guard bias was set to 15 V.

