

Supplementary Information

Compound Coverage Enhancement of  
Electrospray Ionization Mass Spectrometry  
through the Addition of a Homemade Needle

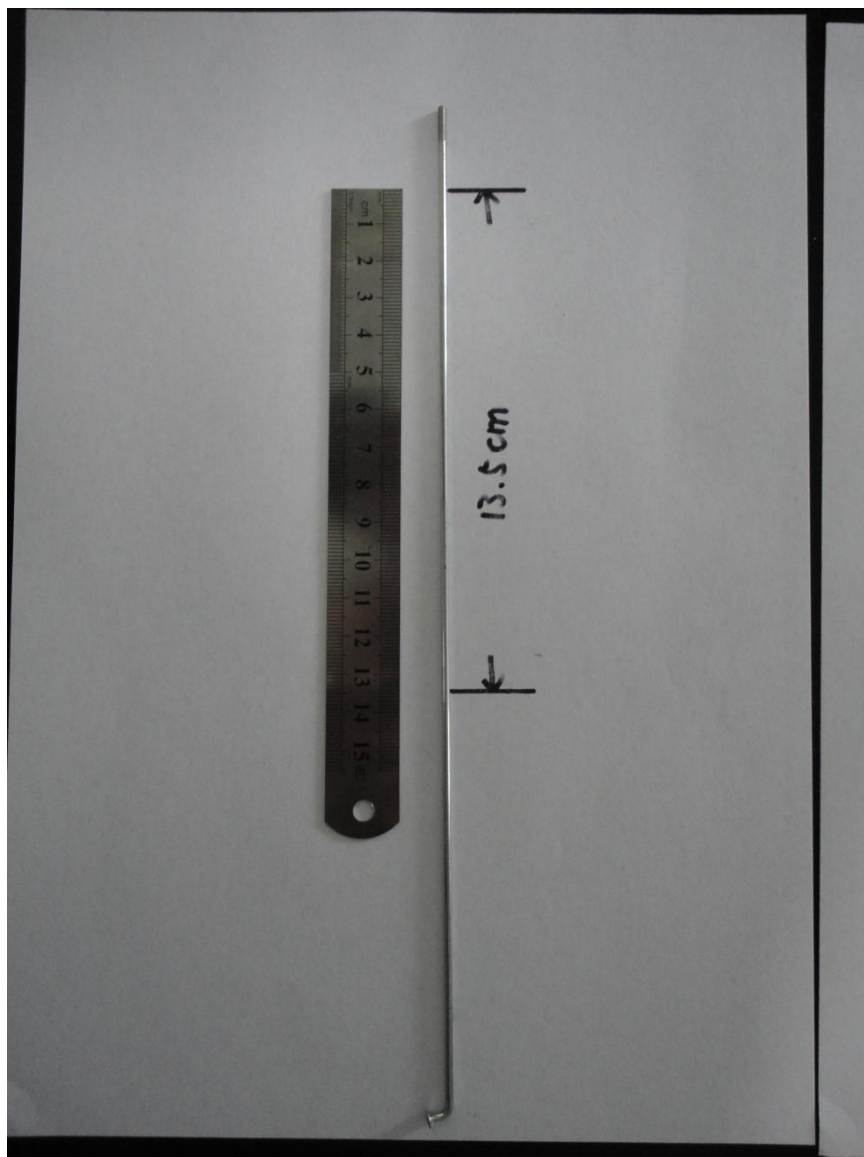
*Shun Xiao, Yufeng Zhang<sup>a\*</sup>, Yi Wang, Yiyu Cheng*

<sup>a</sup> College of Pharmaceutical Sciences, Zhejiang University, Hangzhou, Zhejiang, China.

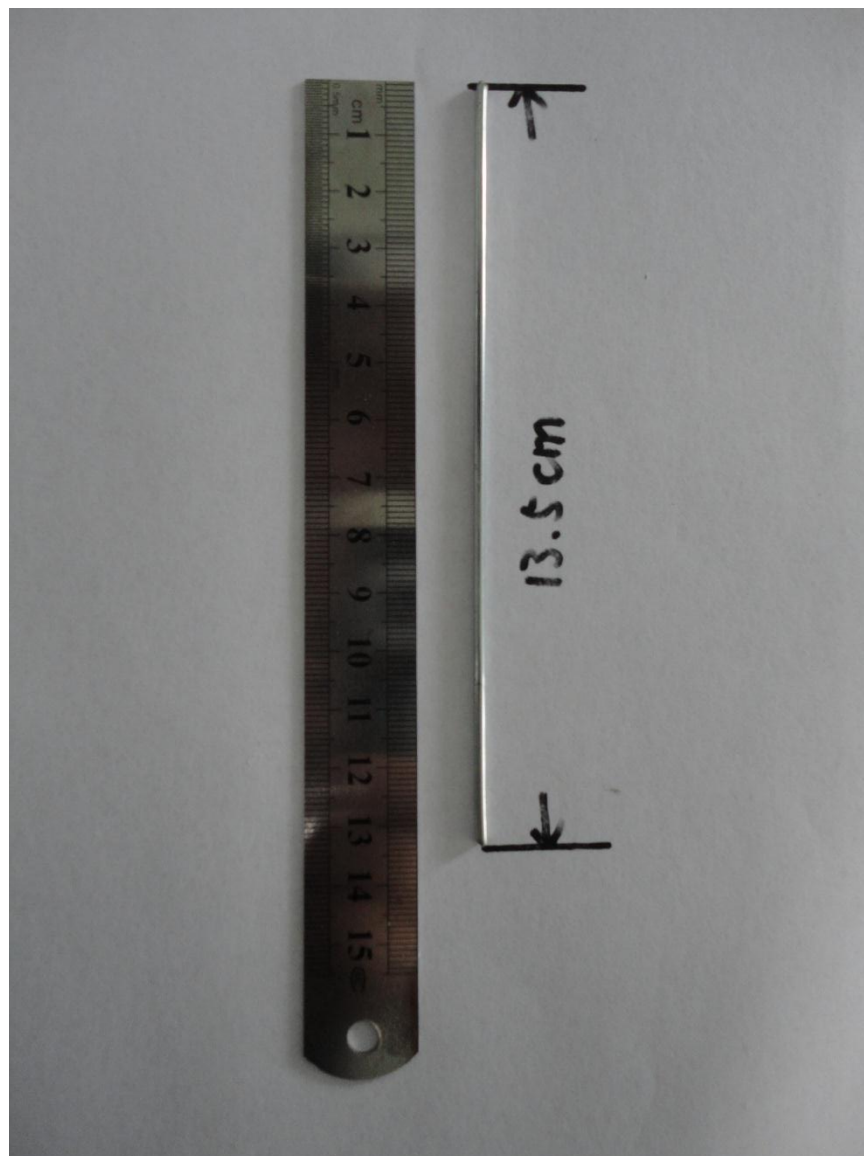
310058, Tel: +86-0571-88208426, Fax: +86-0571-88208426, E-mail:

[zhangyf@zju.edu.cn](mailto:zhangyf@zju.edu.cn).

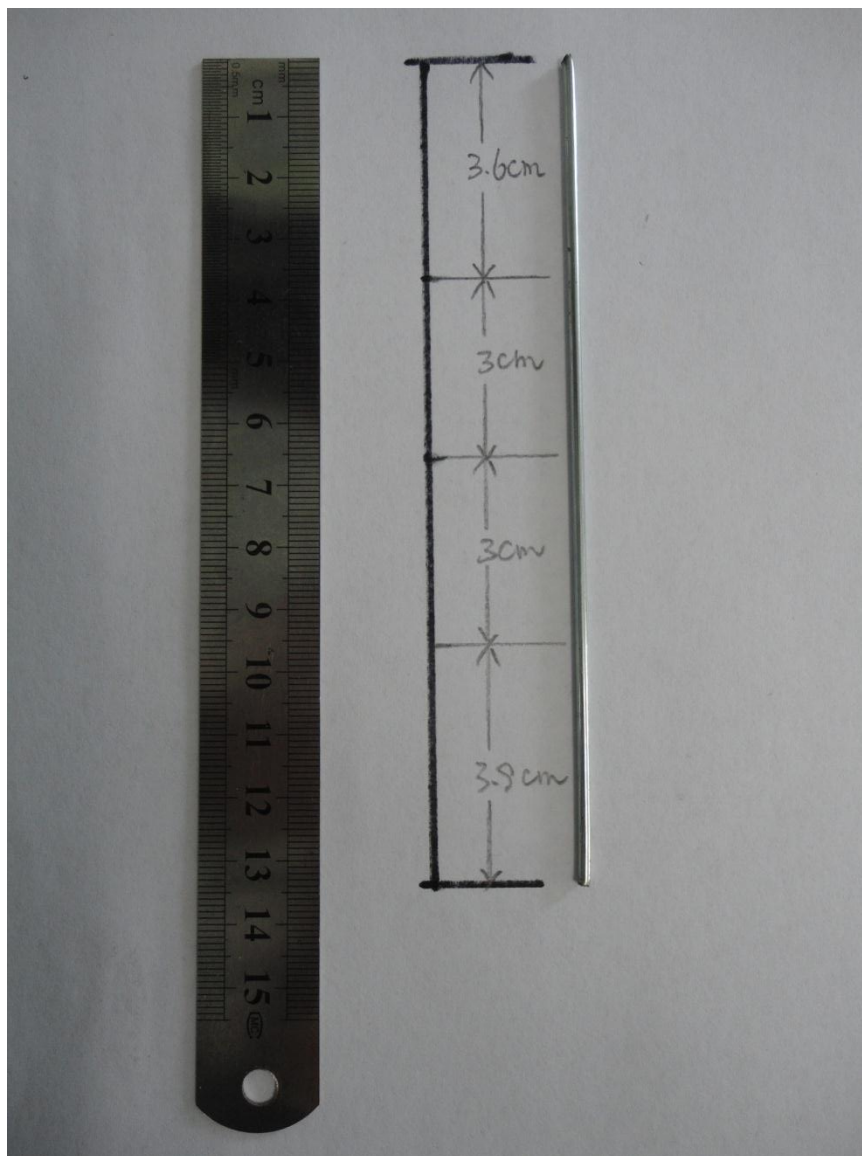
1. The detailed manufacture process of a homemade needle was as follows (Fig.S1 to Fig.S8).



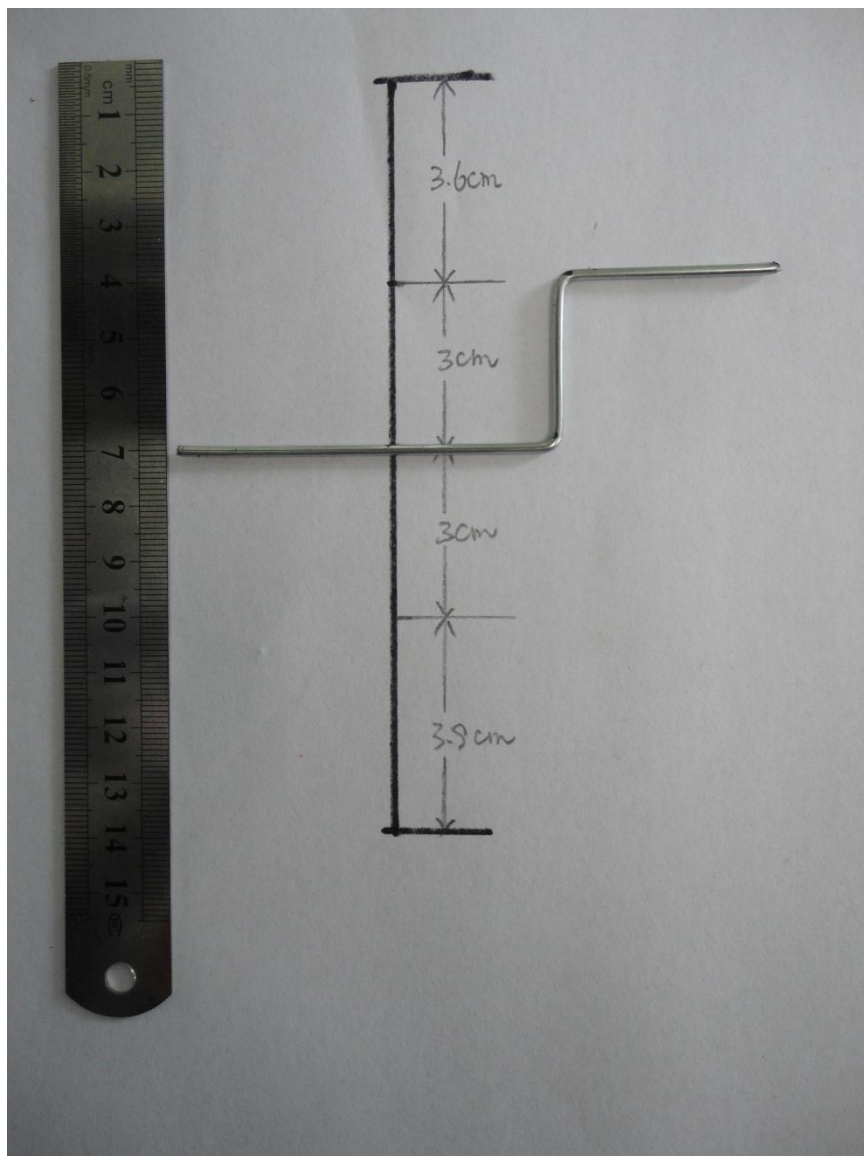
**Fig S1.** Chose a suitable bicycle spoke.



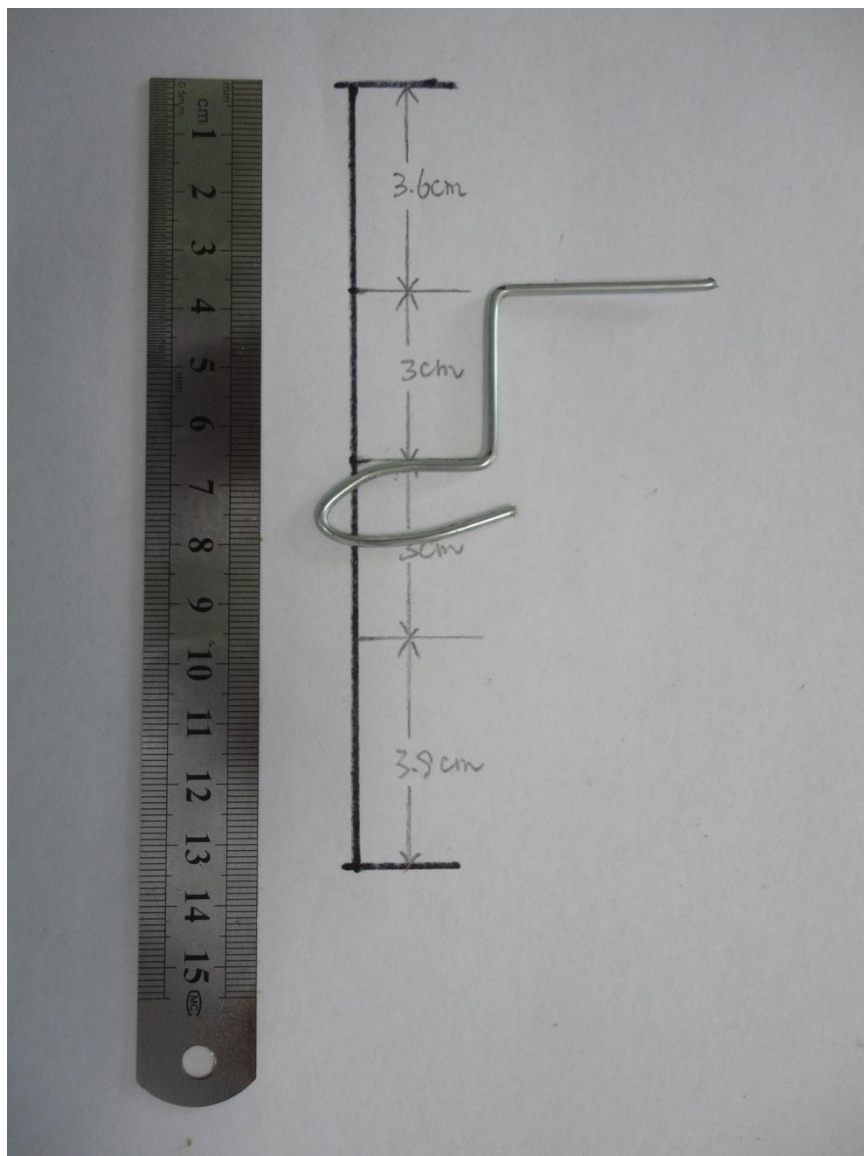
**Fig S2.** Cut a section of 13.5 cm with a plier.



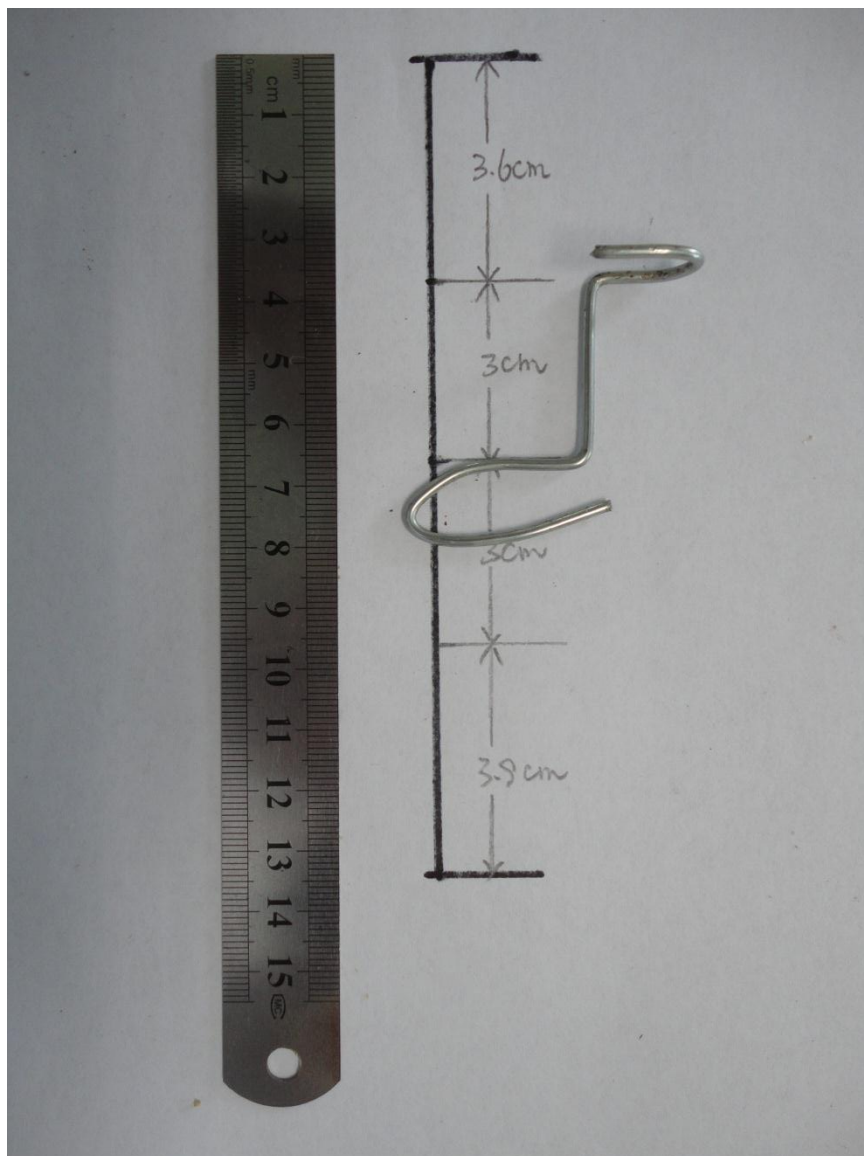
**Fig S3.** Identify three major turning point: the first 3.6 cm will used to make the hook to fixed to the ESI nozzle; the second 3 cm will be a straight line parallel to the ESI nozzle and long enough to make the pinpoint to the front of the spray; the last 3 and 3.9 cm will used to make the pinhead.



**Fig S4.** Bending operation: the second 3 cm was bent into a straight line parallel to the ESI nozzle.



**Fig S5.** Bending operation: the last 6.9 cm was bent into the pinhead and make the end of the pin a little beyond to the front of the ESI nozzle.

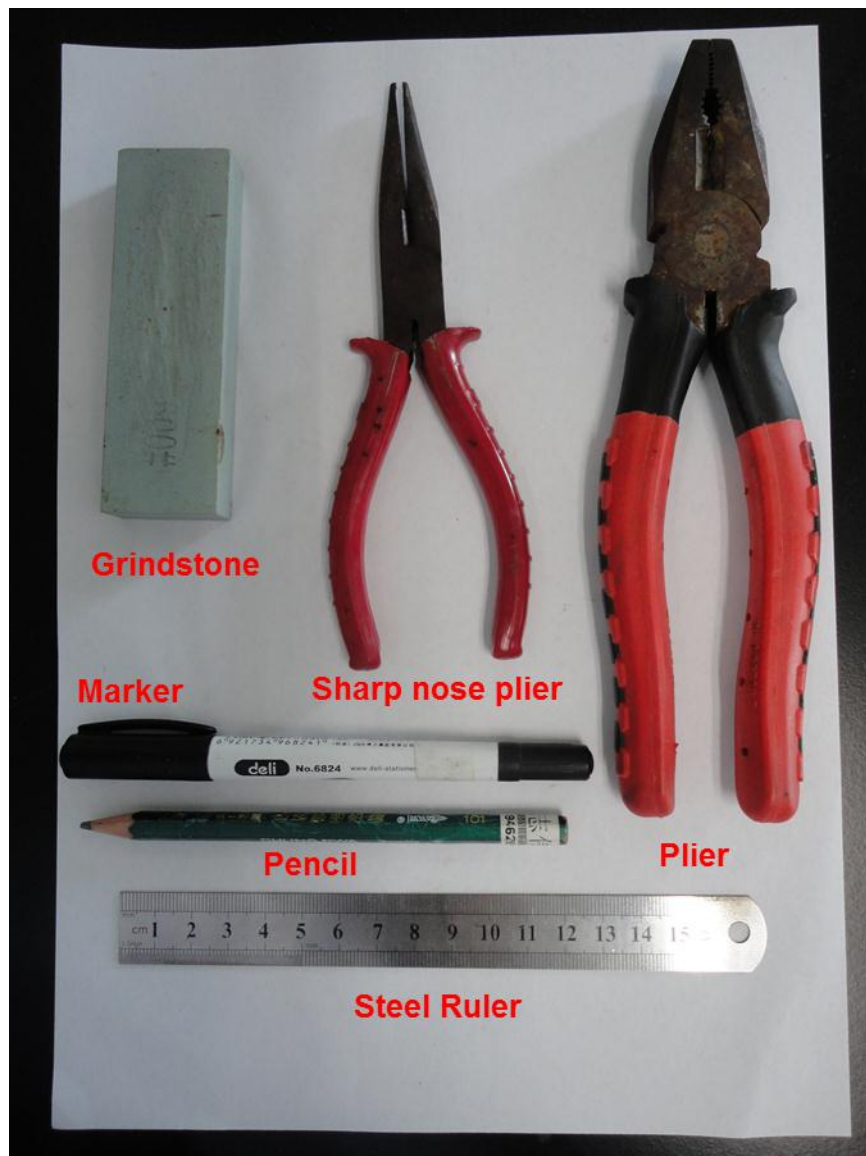


**Fig S6.** Bending operation: the first 3.6 cm was bent into the hook to fix to the ESI nozzle.  
Notice that the curvature and size of the hook must be strictly suited with the nozzle size.



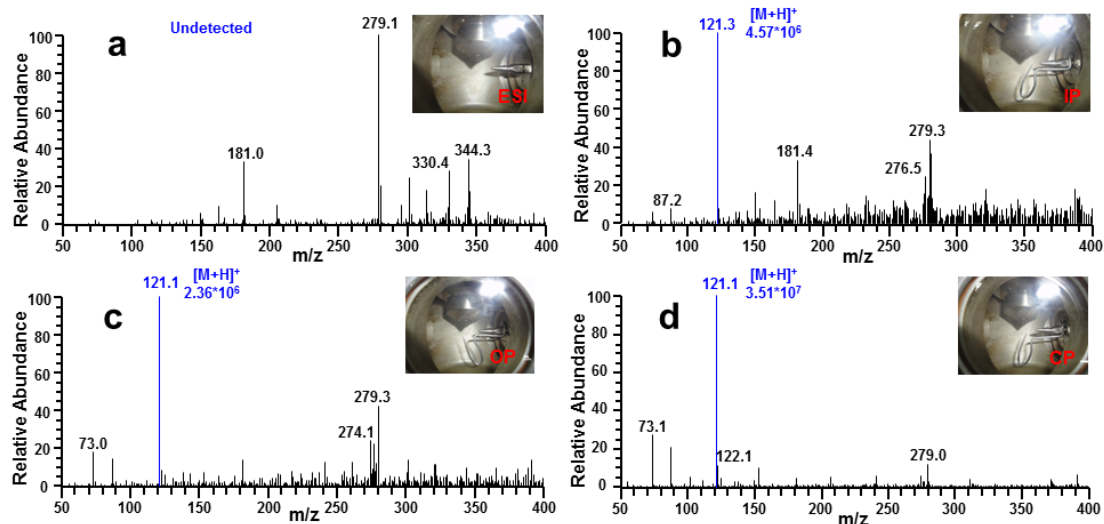
**Fig S7.** Grinding operation: use a grindstone to polish the tip.





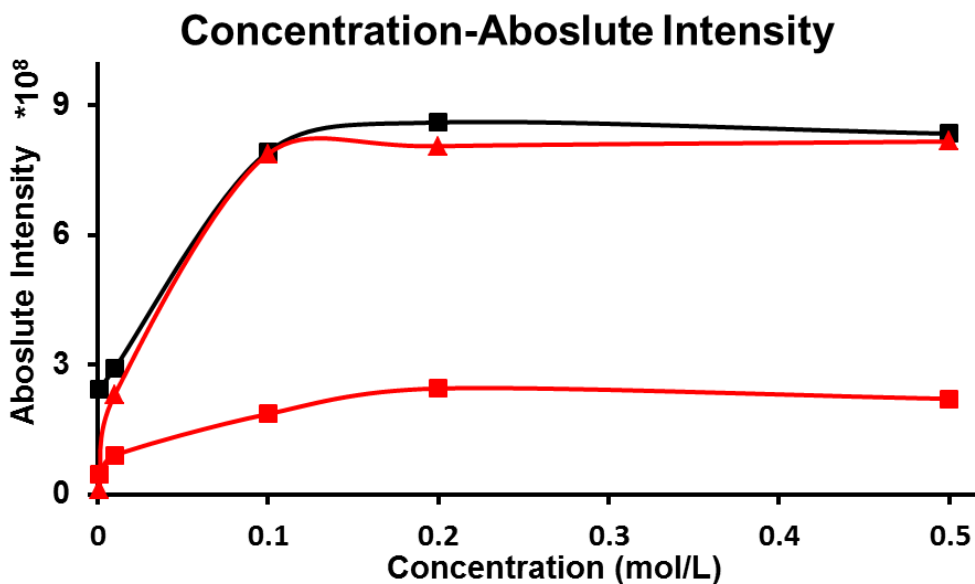
**Fig S8.** Tools used in this manufacture process.

1. The intensity differences between each pinpoint position were determined as out of the plume (OP), in the plume (IP), or at the center of the plume (CP).



**Fig S9.** Mass spectra of 1-phenylethanone as obtained using (a) the standard electrospray ionization (ESI) source, (b) the in-the-plume (IP) mode, (c) the out-of-the-plume (OP) mode, and (d) the at-the-center-of-the-plume (CP) mode.

2. Different concentration of samples were tested in ESI and HMI.



**Fig. S10** Absolute intensity of different concentrations of naringin in ESI (■) or HMI (■) and 1-phenylethanone in HMI (▲).

**3. The instrument picture with the homemade needle working in the spray.**

