

## **Electronic Supplementary Information (ESI\_1) for**

### **Simultaneous extraction and surface enhanced Raman spectroscopy detection for rapid and reliable identification of nicotine release of snus products**

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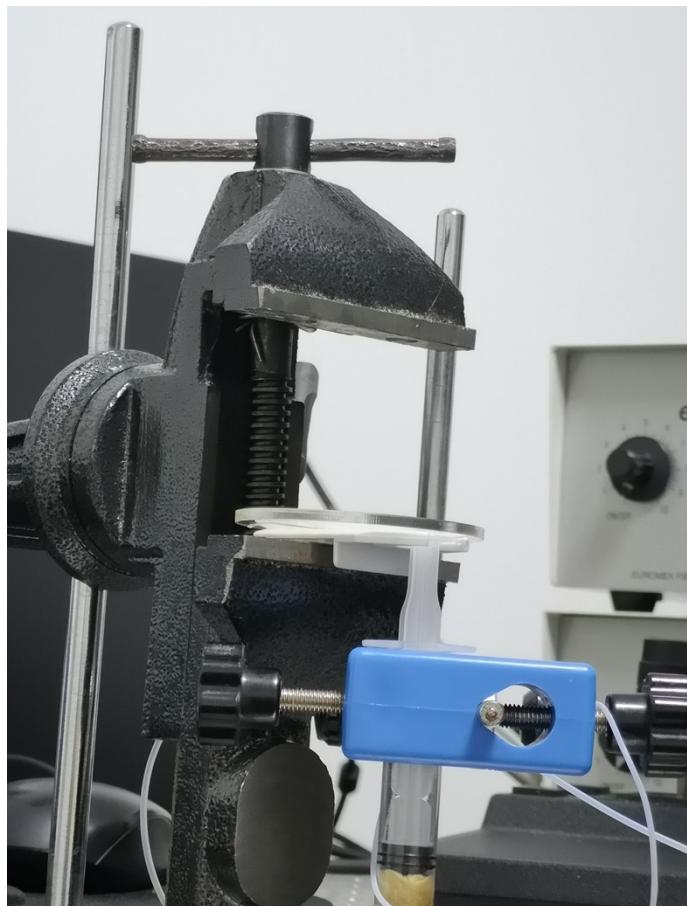
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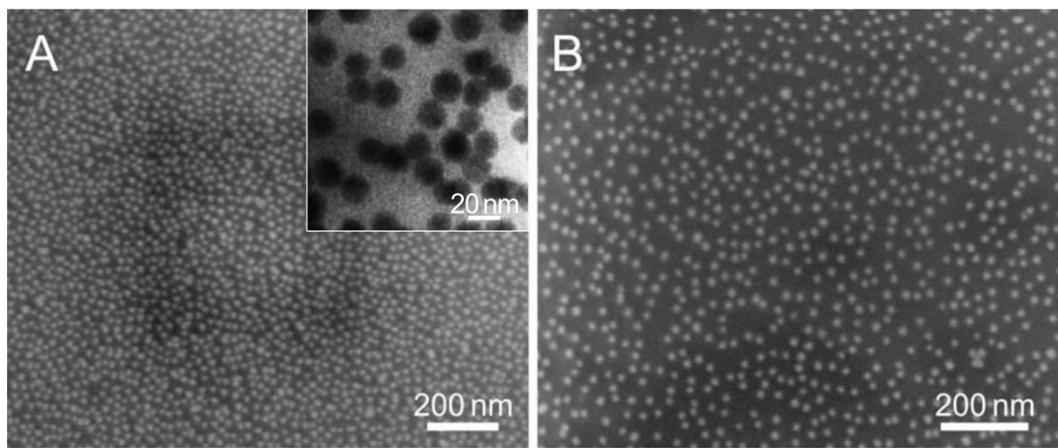
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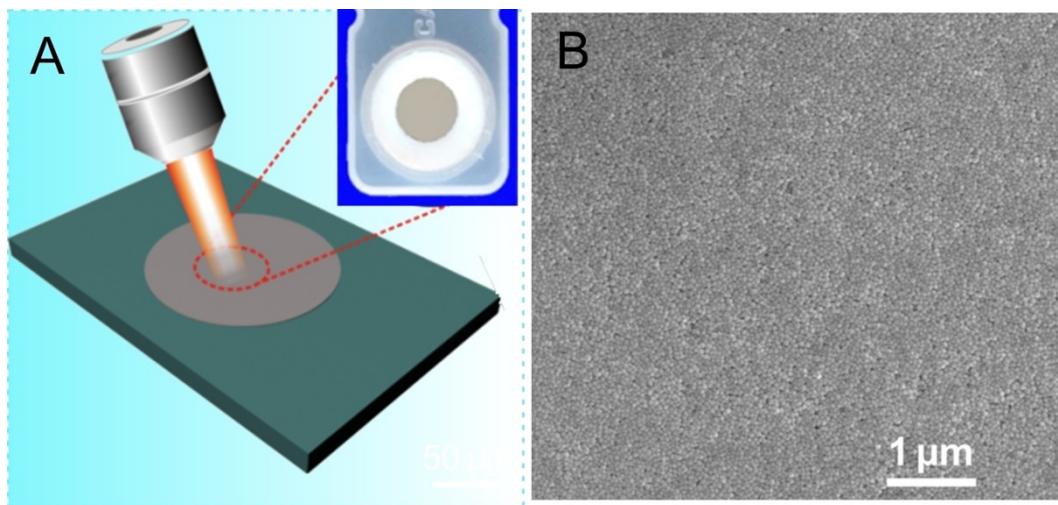
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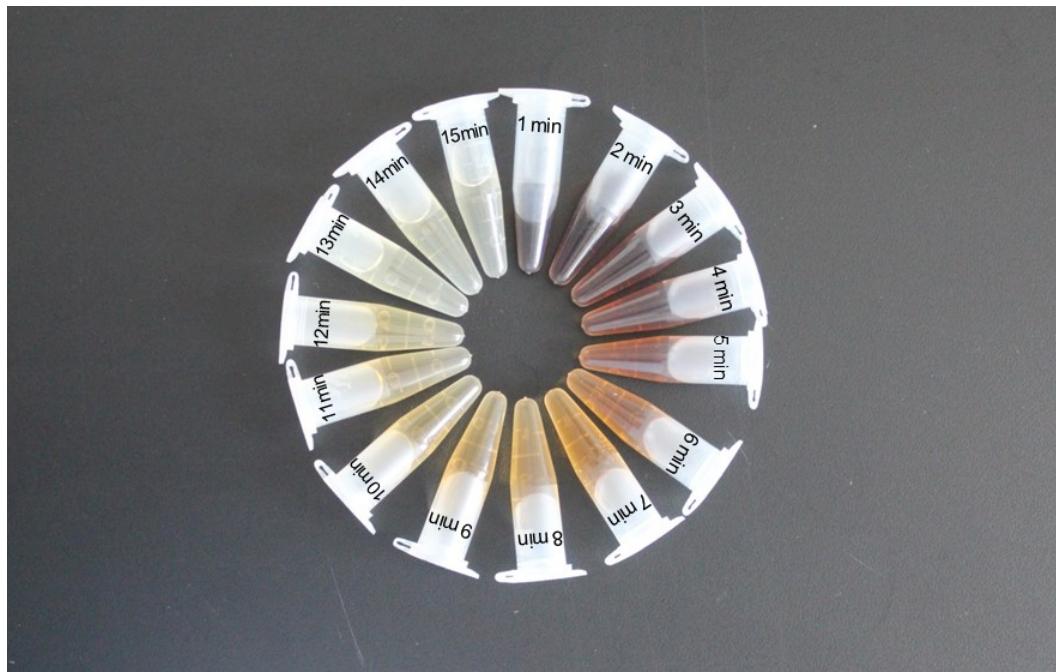
**Fig.S1** By simply simulating the opening and closing movements of the mouth and the salivary swallowing process, and based on the pump to achieve the salivary flow control, the simulated oral tobacco intake device was obtained. In other words, by turning adjustment screw clockwise or counterclockwise five times in turn to change the height of the piston pump trap, the contact between the piston and snus pouch through the pressure to achieve the simulation of the opening and closing movements of the mouth and the salivary swallowing process can be adjusted. And then take the extraction sample every min by pressure piston pump. During the actual operation, in the mechanical design of the system, screw pair drive was applied to achieve the up-and-down movement of the pump. The corresponding video can be seen in ESI\_2.



**Fig.S2** (A) Typical SEM image of initial construction of nano-Au assembly structure in the capillary and TEM image of AuNP seeds (inset). What is difficult about the construction of capillary structures loaded with AuNPs? Actually, it is very important to explore the selection of appropriate dispersant/protective system, the deployment of growth solution, and the combination of low heat treatment. Otherwise, it will cause abscission of nano-Au from capillary inner wall (B). More details of growth regulation of nano-assembly structure those are beyond the scope of this manuscript.



**Fig.S3** Typical solid state film forming SERS chip and SEM image.



**Fig.S4** Typical digital photo of series of extracting solutions based on simulated oral tobacco intake device to obtain from snus pouch.