

Supporting Information:

**Facile fabrication and growth mechanism of 3D flower-like Fe₃O₄
nanostructures and their application as SERS substrates**

**Qian Gao^{a,b}, Aiwu Zhao^{a,b*}, Zibao Gan^a, Wenyu Tao^a, Da Li^a, Maofeng Zhang^a,
Hongyan Guo^a, Dapeng Wang^a, Henghui Sun^a, Ranran Mao^a and Erhu Liu^a**

*^aInstitute of Intelligent Machines, Chinese Academy of Sciences, Hefei, 230031, P. R.
China*

*^bState Key Laboratory of Transducer Technology, Chinese Academy of Sciences,
Hefei, 230031, P. R. China*

* To whom correspondence should be addressed. E-mail: awzhao@iim.ac.cn Tel:
+86-551-5593360 Fax: +86-551-5593360

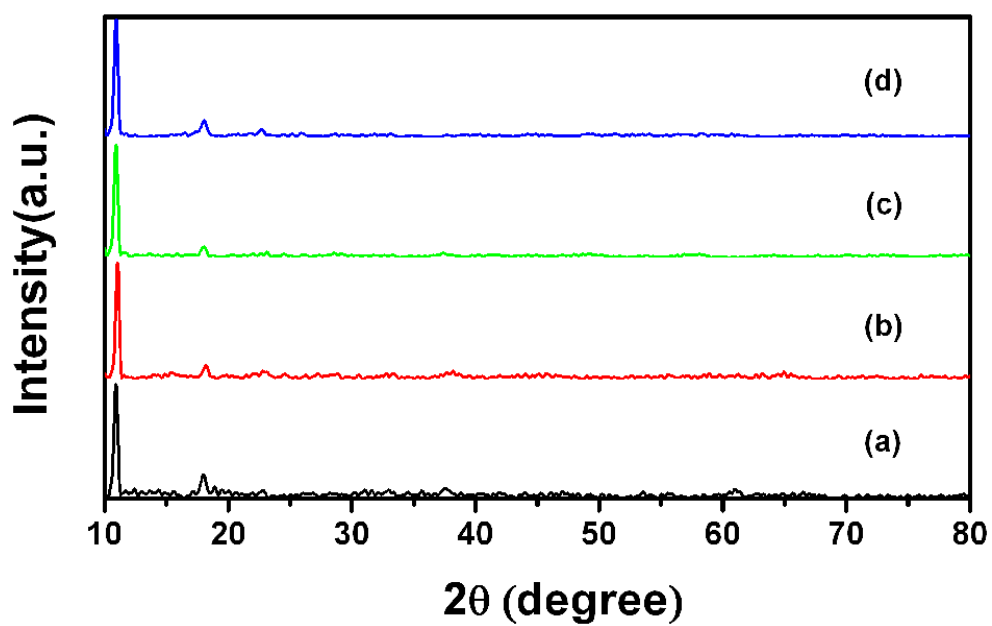


Figure S1 XRD patterns of the precursors: (a) sample P1, (b) sample P2, (c) sample P3, (d) sample P4.

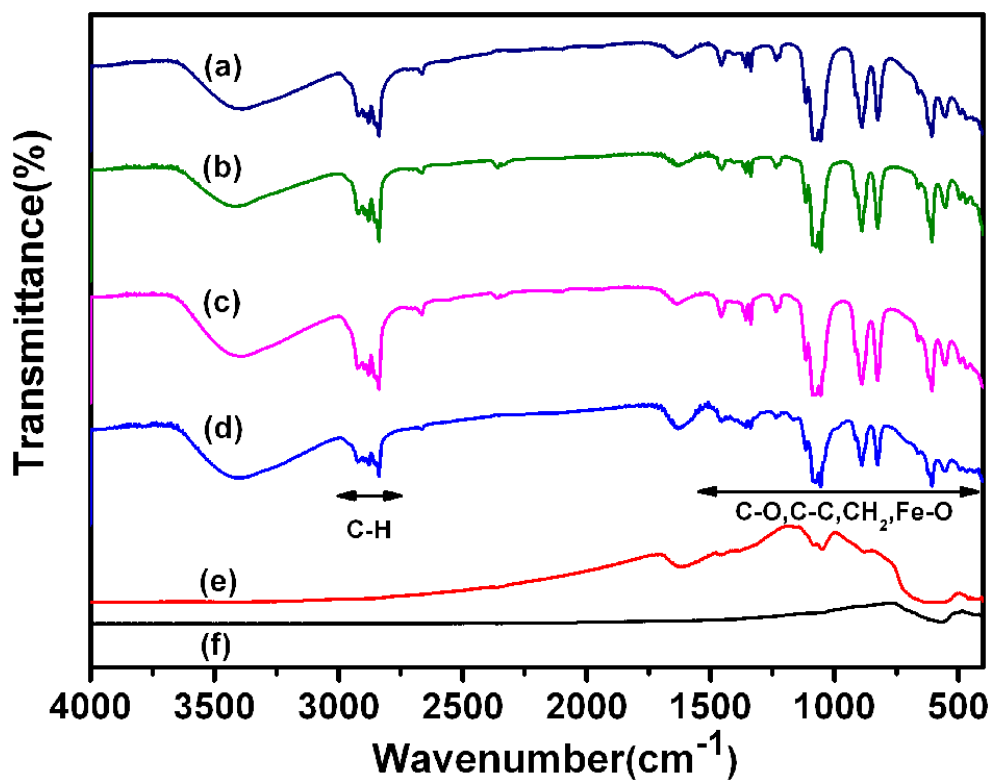


Figure S2 FTIR spectra of the precursors: (a) sample P2, (b) sample P3, (c) sample P4, (d) sample P5, (e) sample P7, (f) sample T31.

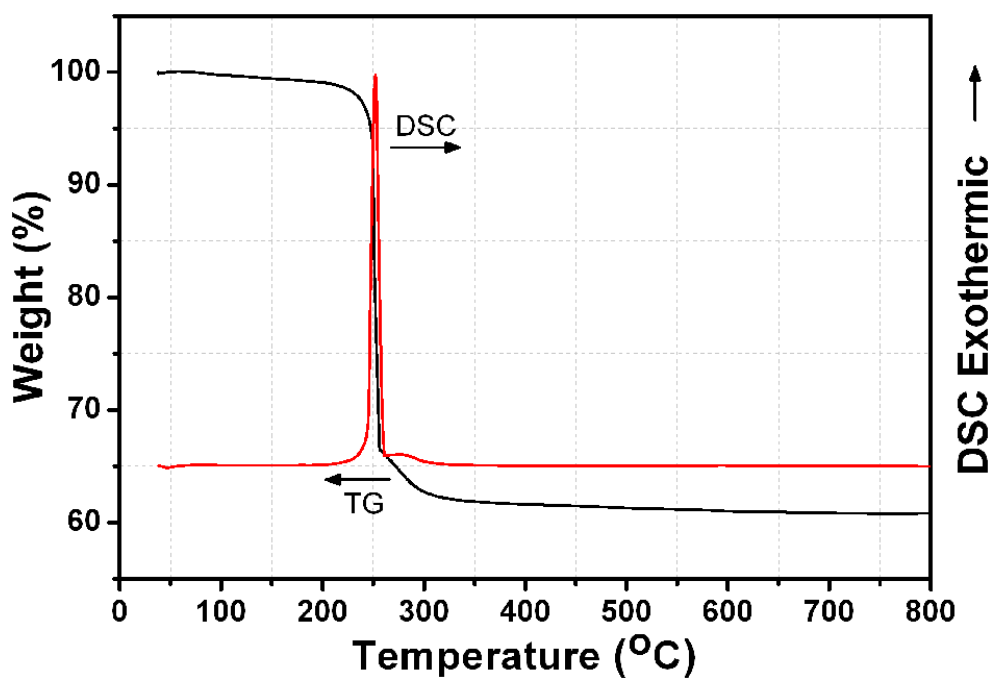


Figure S3 TGA- DSC curves of sample P2.

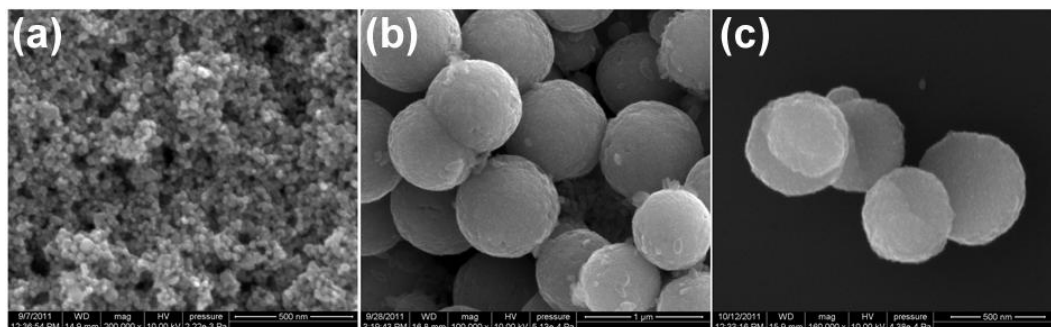


Figure S4 SEM images of the products prepared with the different solvothermal conditions: (a) sample P8, (b) sample P9, (c) sample P10.

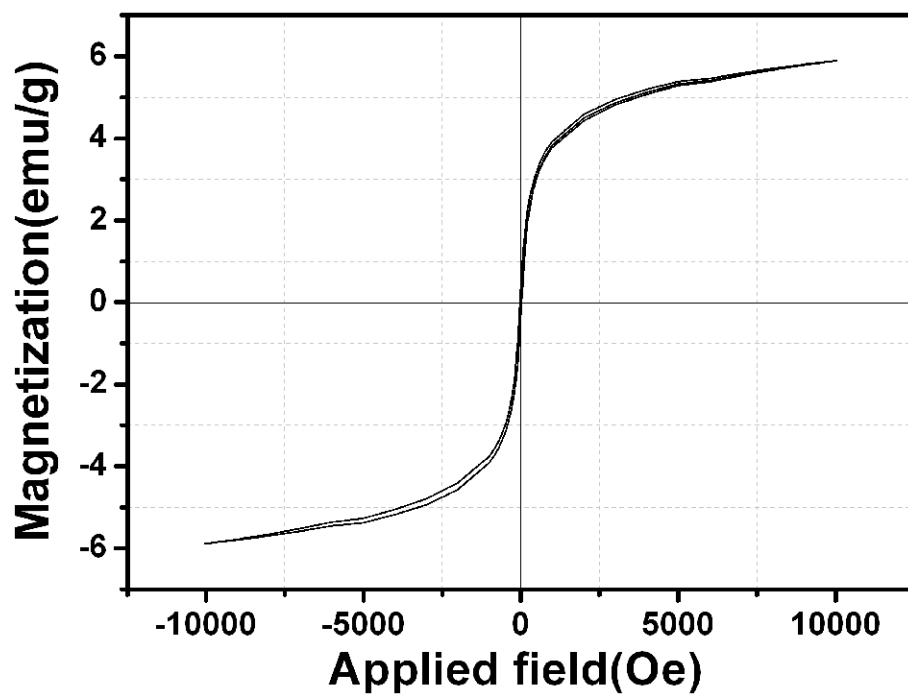


Figure S5 The magnetization curves measured at room temperature for the sample T42.

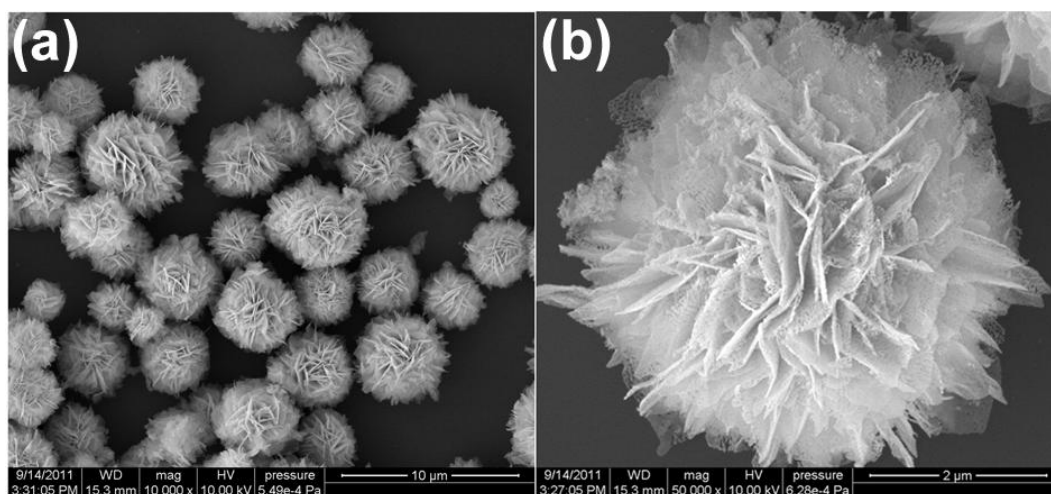


Figure S6 (a) Low- and high- magnification SEM images of sample T42.