

Article

Ultra-Sensitive, Rapid and On-Site Sensing Harmful Ingredients Used in Aquaculture with Magnetic Fluid SERS

Meizhen Zhang ¹, Jingru Liao ¹, Xianming Kong ^{1,*}, Qian Yu ¹, Miao Zhang ^{2,*} and Alan X. Wang ³
¹ School of Petrochemical Engineering, Liaoning Petrochemical University, Fushun 113001, China; zzm121_q@sina.cn (M.Z.); ljru12@163.com (J.L.); qyu@lnpu.edu.cn (Q.Y.)

² Department of Materials and Environmental Chemistry, Stockholm University, 10691 Stockholm, Sweden

³ School of Electrical Engineering and Computer Science, Oregon State University, Corvallis, OR 97331, USA; alan.wang@oregonstate.edu

* Correspondence: xmkong@lnpu.edu.cn (X.K.); miao.zhang@mmk.su.se (M.Z.)

Citation: Zhang, M.; Liao, J.; Kong, X.; Yu, Q.; Zhang, M.; Wang, A.X. Ultra-Sensitive, Rapid and On-Site Sensing Harmful Ingredients Used in Aquaculture with Magnetic Fluid SERS. *Biosensors* **2022**, *12*, 169. <https://doi.org/10.3390/bios12030169>

Received: 15 February 2022

Accepted: 7 March 2022

Published: 9 March 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

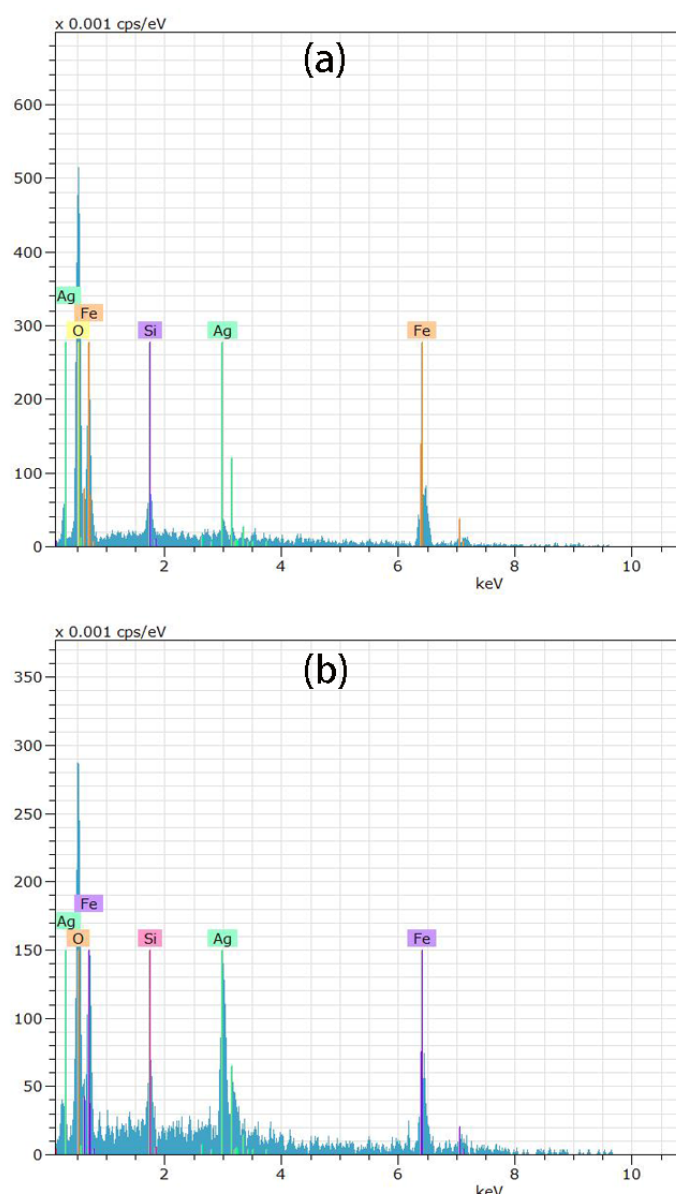


Figure S1. EDS spectra of AgMNP prepared with original Ag colloid (a) and 8 times concentrated Ag colloid (b).

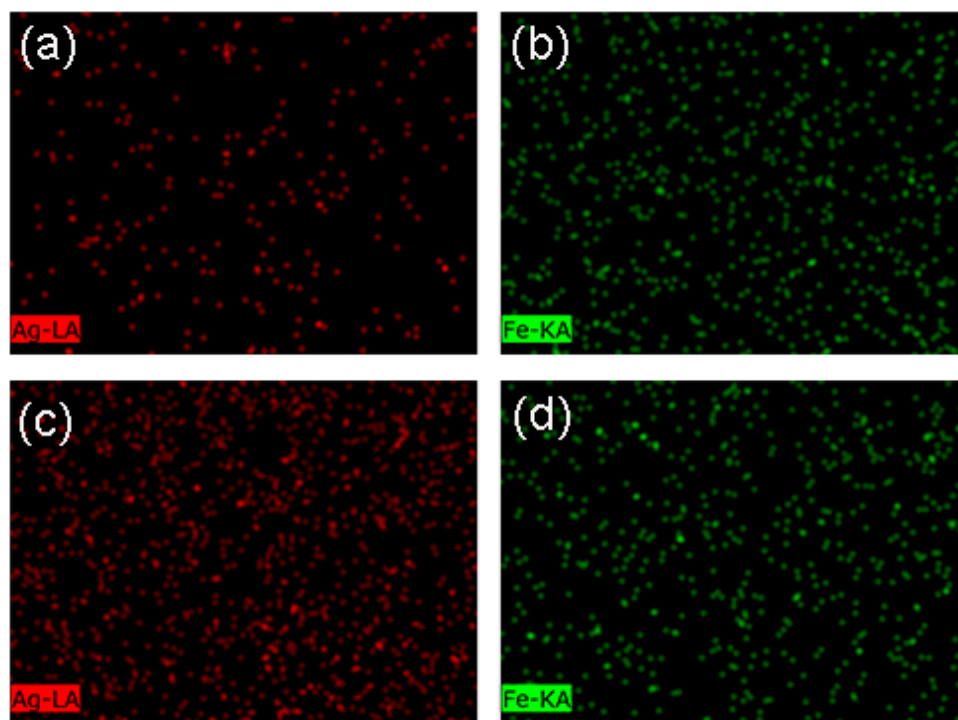


Figure S2. Elemental mappings of AgMNP prepared with original Ag colloid (a, b) 8 times concentrated Ag colloid (c, d).

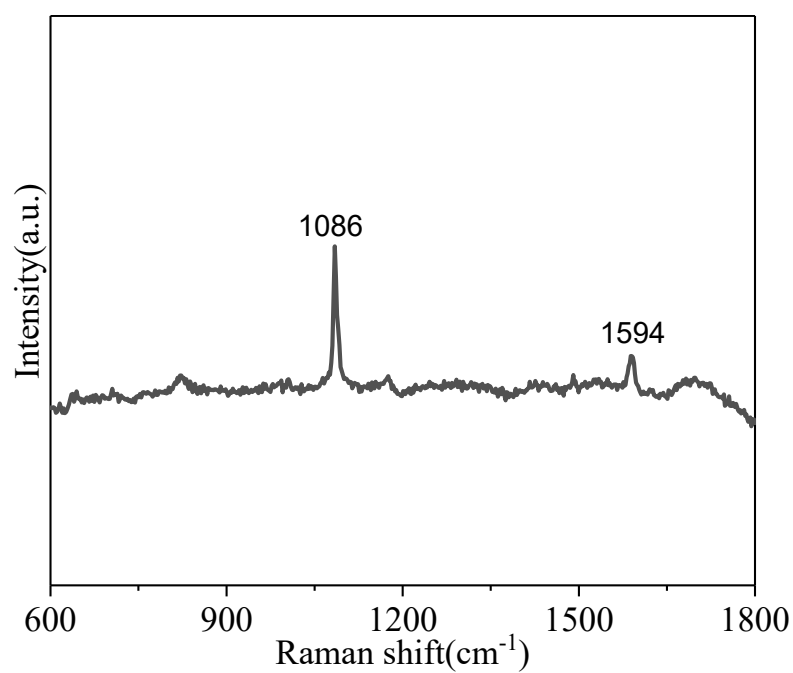


Figure S3. Raman spectra of solid PATP.