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Supporting Information

2 **Horseradish peroxidase-catalyzed polyacrylamide gels:**
3 **monitoring their polymerization with BSA-stabilized gold**
4 **nanoclusters and their functional validation in electrophoresis**

5 **Chang Liao^{1#}, Tao Li^{1#}, Fengjiao Chen², Shaoying Yan³, Liying Zhu⁴, Hua Tang^{1*},**
6 **Dan Wang^{5*}**

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- 8 *1. Key Laboratory of Molecular Biology for Infectious Diseases (Ministry of Education),*
9 *Chongqing Medical University, Chongqing 400016, China.*
10 *2. Guangshan County People's Hospital, Xinyang 465450, China.*
11 *3. Department of Clinical Laboratory, The First Affiliated Hospital of Nanchang University,*
12 *Nanchang, Jiangxi 330000, China*
13 *4. Center for Clinical Laboratories, Affiliated Hospital of Guizhou Medical University, Guiyang*
14 *550004, China*
15 *5. Post-Doctoral Research Center, The People's Hospital of Rongchang District, Chongqing*
16 *402460, China.*

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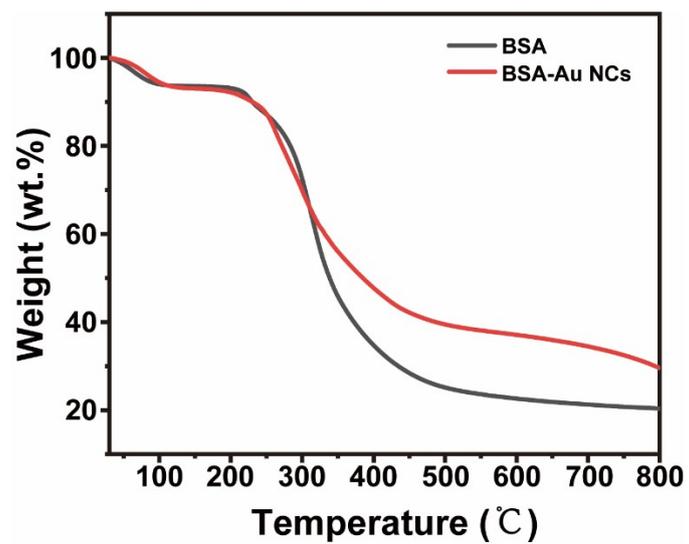
18 # Chang Liao and Tao Li have contributed equally to this work.

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20 *Correspondence Hua Tang and Dan Wang.

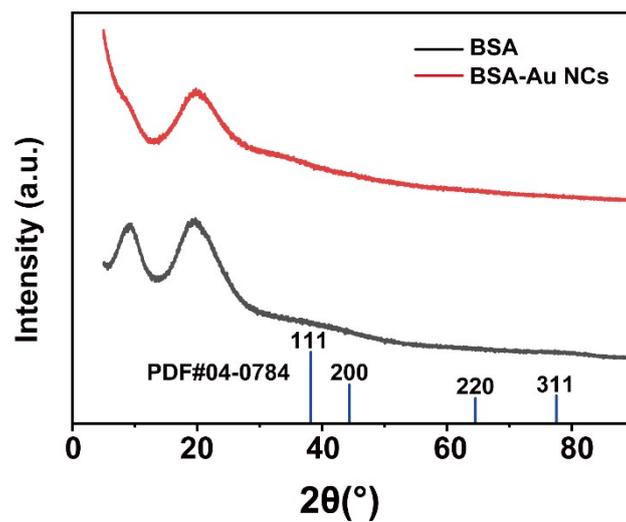
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22 E-mail: tanghua86162003@cqmu.edu.cn or cqwangdan61@163.com.



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Figure S1. TGA curves of BSA and BSA-Au NCs



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Figure S2. XRD spectrum of BSA and BSA-Au NCs.

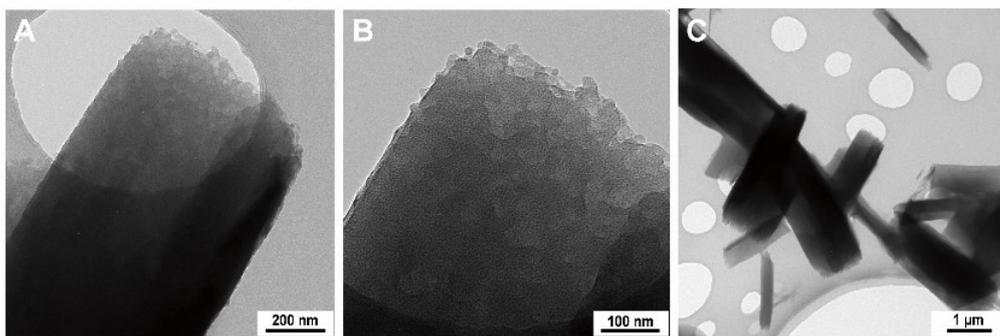
before after



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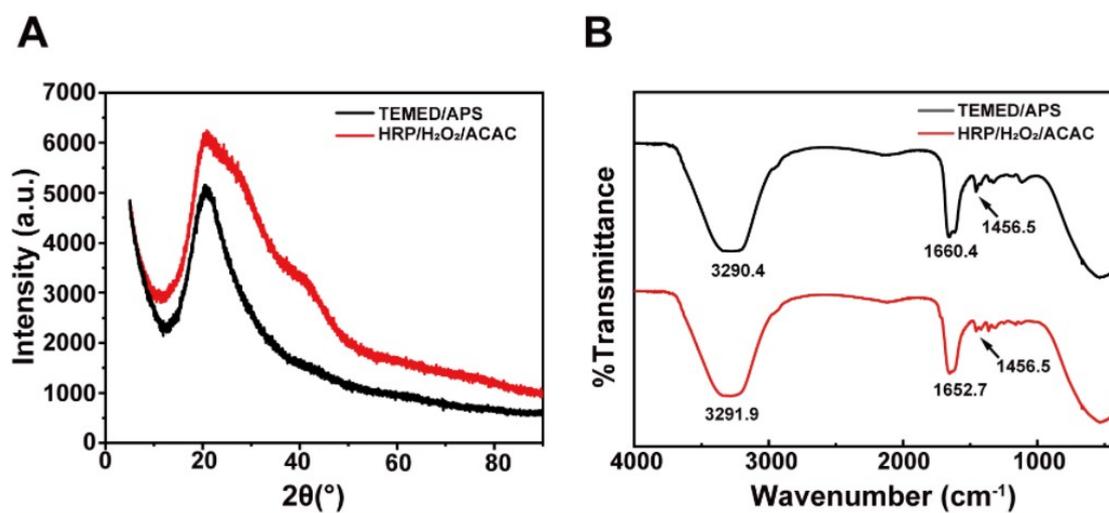
31 **Figure S3.** Photographic images of polyacrylamide gel catalyzed by HRP/H₂O₂/ACAC, taken
32 before and after polymerization under UV light (365 nm).

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34 **Figure S4.** HRTEM images of BSA-Au NCs in polyacrylamide gels with different magnifications.

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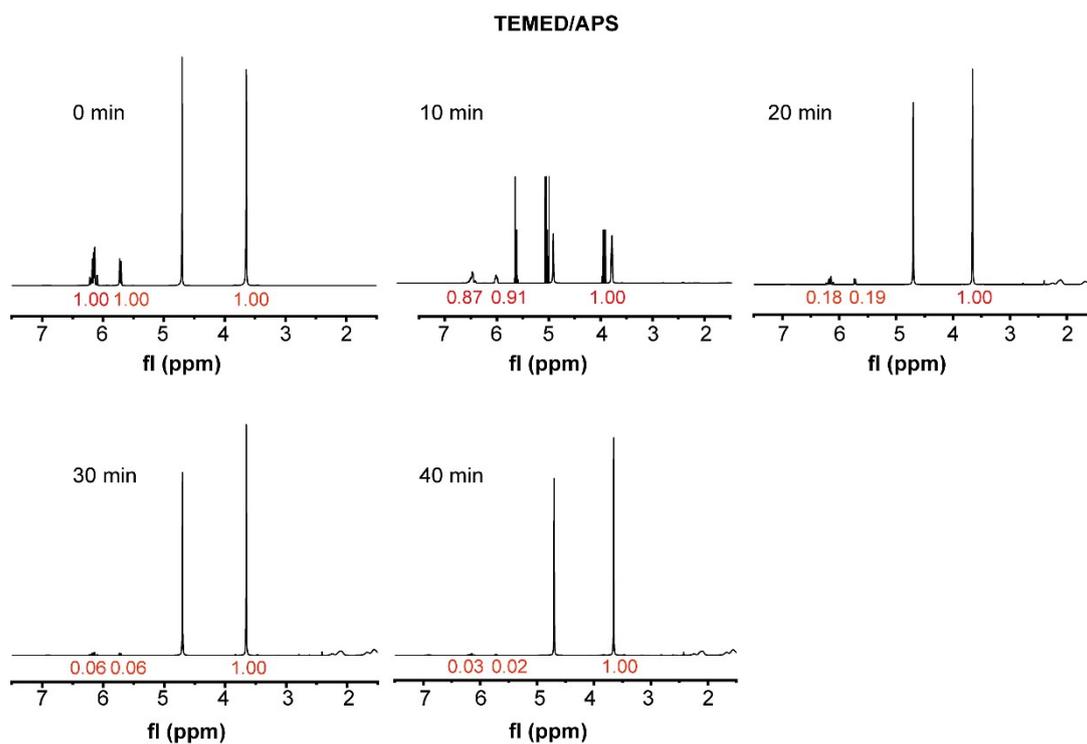


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37 **Figure S5.** (A) XRD spectrum and (B) FT-IR spectrum of polyacrylamide gels catalyzed by
38 TEMED/APS and HRP/H₂O₂/ACAC.

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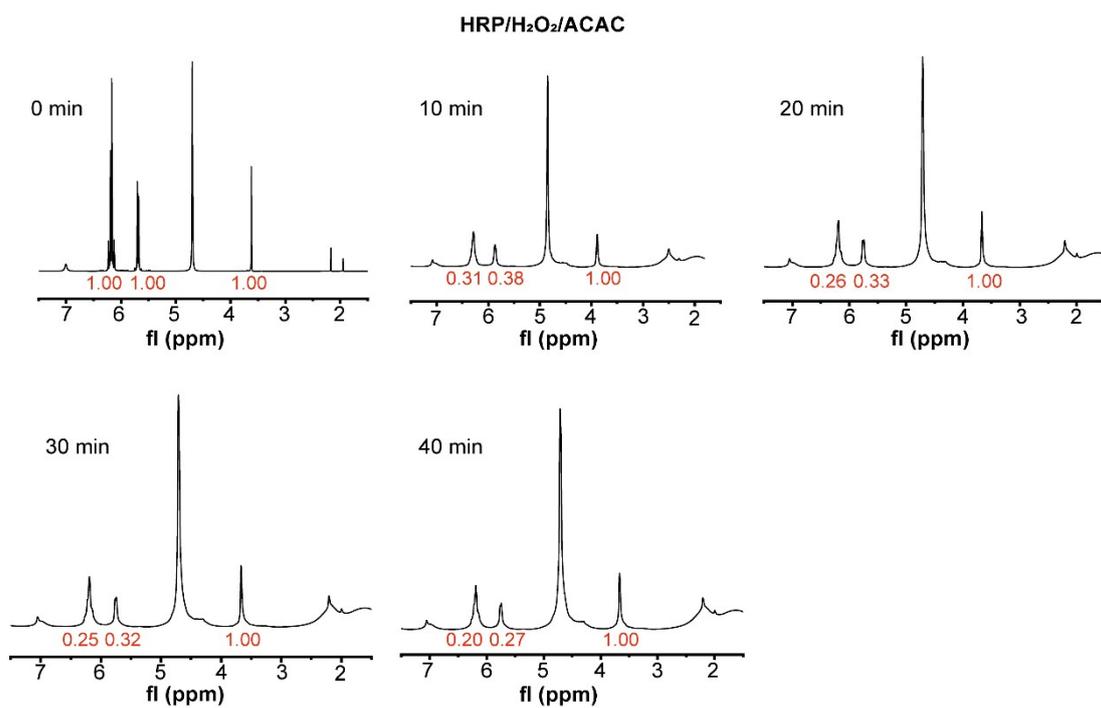
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42 **Figure S6.** ¹H-NMR spectrum of TEMED/APS-catalyzed polyacrylamide gels at different

43 points in time.



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45 **Figure S7.** ¹H-NMR spectrum of HRP/H₂O₂/ACAC-catalyzed polyacrylamide gels at different

46 points in time.