Porous wood decorated with gold nanoparticles as flow-through membrane reactor for catalytic hydrogenation of methylene blue and 4-nitrophenol

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Fig. S1 SEM of (a) the Wood and (b) the Au NPs/Wood



Fig. S2 (a) The isolated Au NPs suspension, (b) the suspension after 2 h standing, (c) the absorbance change of MB solution catalytically degraded with Au NPs.

The continuous flow catalytic degradation of MB by the wood and Au NPs/Wood were demonstrated in Fig. S3a and c, respectively. It was shown that little change was observed when the MB solution filtrated through the wood, however, the MB solution became colorless as filtrating through the Au NPs/Wood. The UV-Vis analysis was further applied to quantify the catalytic degradation of MB. It was demonstrated that the UV-Vis absorbance of the MB solution was changed a little as it filtrated through the Wood (Fig. S3b). However, when the MB solution was filtrated through the Au NPs/Wood, little absorbance was quantified (Fig. S3d). The result indicated that the Au NPs/Wood has a potential application in continuous flow catalytic reaction.



Fig. S3 (a) The color change of MB solution and (b) the UV-Vis absorbance change of MB solution as filtrating through the wood. (c) The color change of MB solution and (d) the UV-Vis absorbance change of MB solution as filtrating through the Au NPs/Wood.



Fig. S4 (a) The apparatus for the continuous flow catalytic reaction, and (b) the detailed demonstration of the apparatus.