Electronic Supplementary Information

Biocompatible $AgInS_2$@hydrogel microelectrode with enhanced photoelectrochemical sensitivity for real-time *in vivo* dopamine monitoring

Shiting Gu and Zhonghai Zhang*

School of Chemistry and Molecular Engineering, East China Normal University, Shanghai 200241, China

E-mail: zhzhang@chem.ecnu.edu.cn

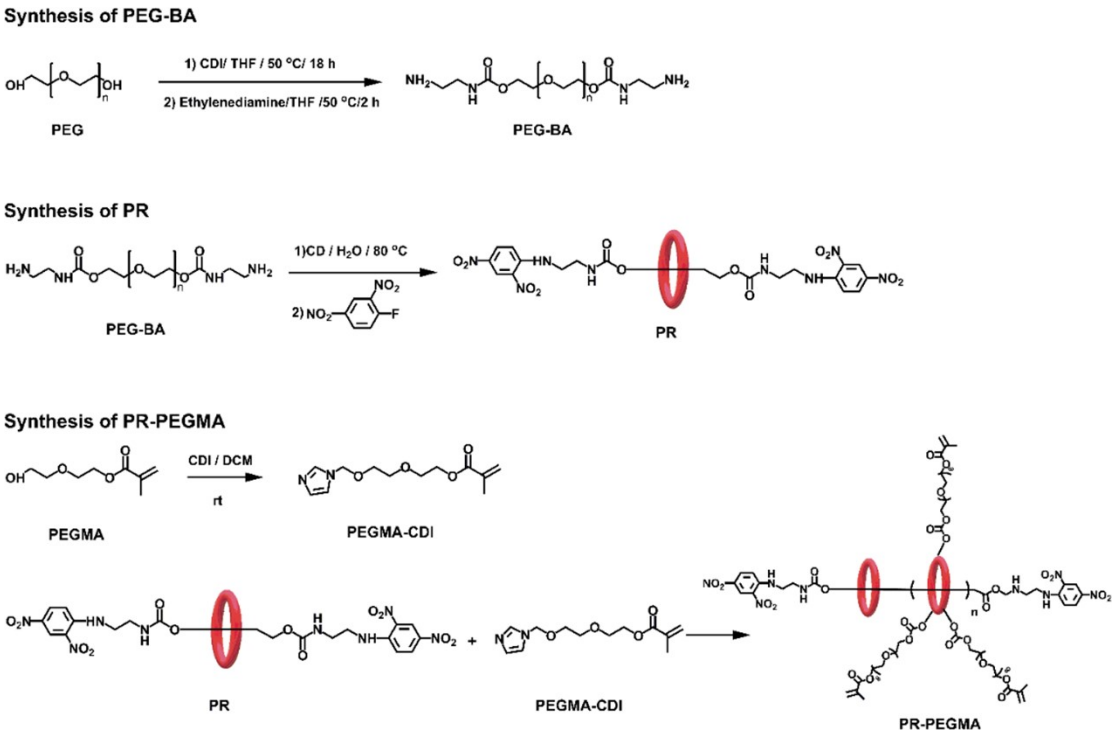

Fig. S1 Synthesis of PR-PEGMA.

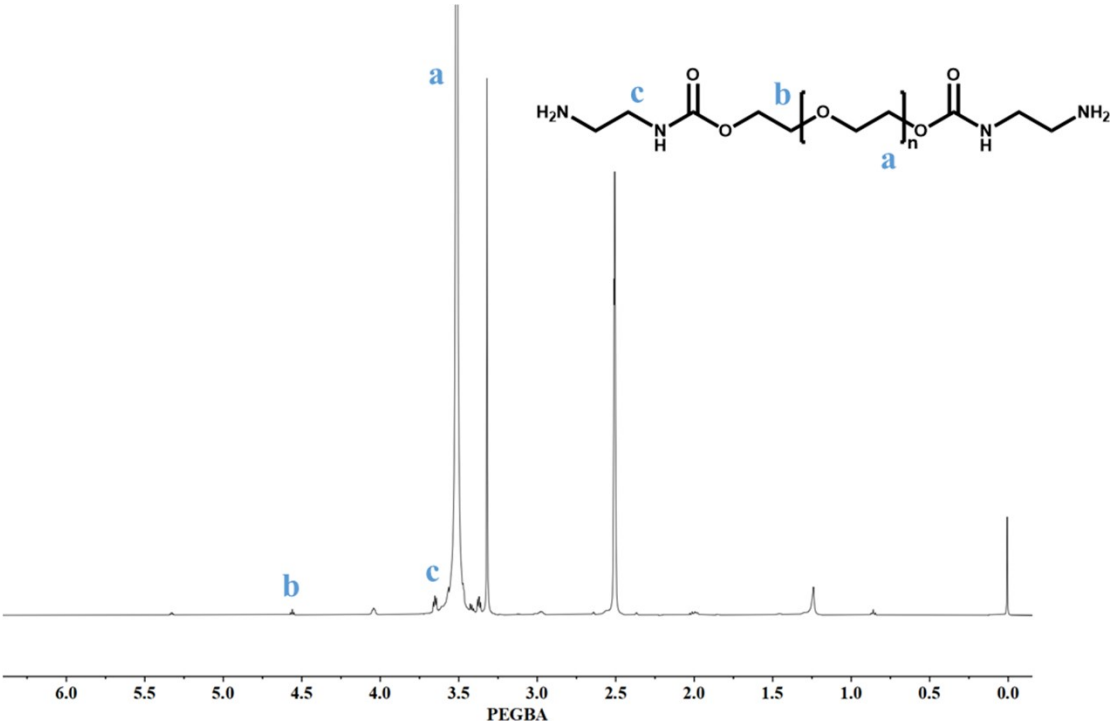

Fig. S2 1H NMR spectrum of PEG-BA in DMSO-d6. The NM signals at δ = 3.5, 3.6, and 4.5 ppm corresponded to Ha, Hb, and Hc in the PEGBA chain, respectively, which proved the successful synthesis of the PRGBA molecule.

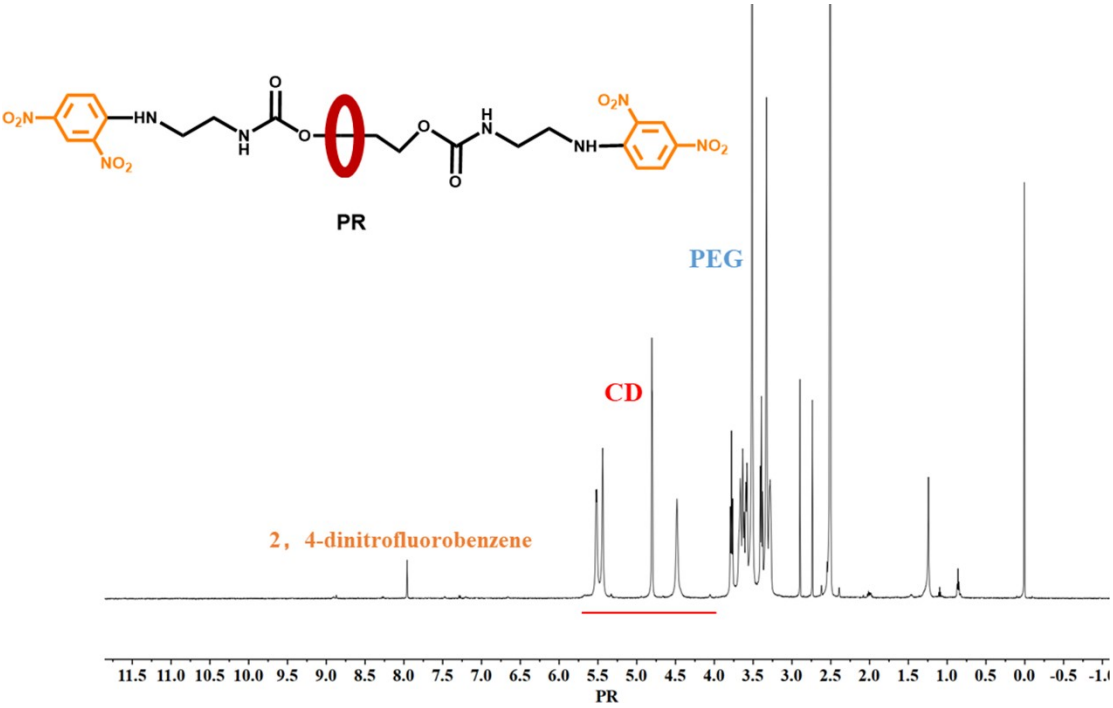

Fig. S3 [1]H NMR spectrum of PR in DMSO-d6. The NM signals at δ = 3.2-5.8 ppm corresponded to the hydrogen signals in CD, and those at δ = 7.3, 7.5, and 8.2 ppm corresponded to the 2,4- hydrogen signals in dinitrofluorobenzene, proving that the CD was encapsulated in the PR chain capped with 2,4-dinitrofluorobenzene, and the PRGMA molecule was successfully synthesized.

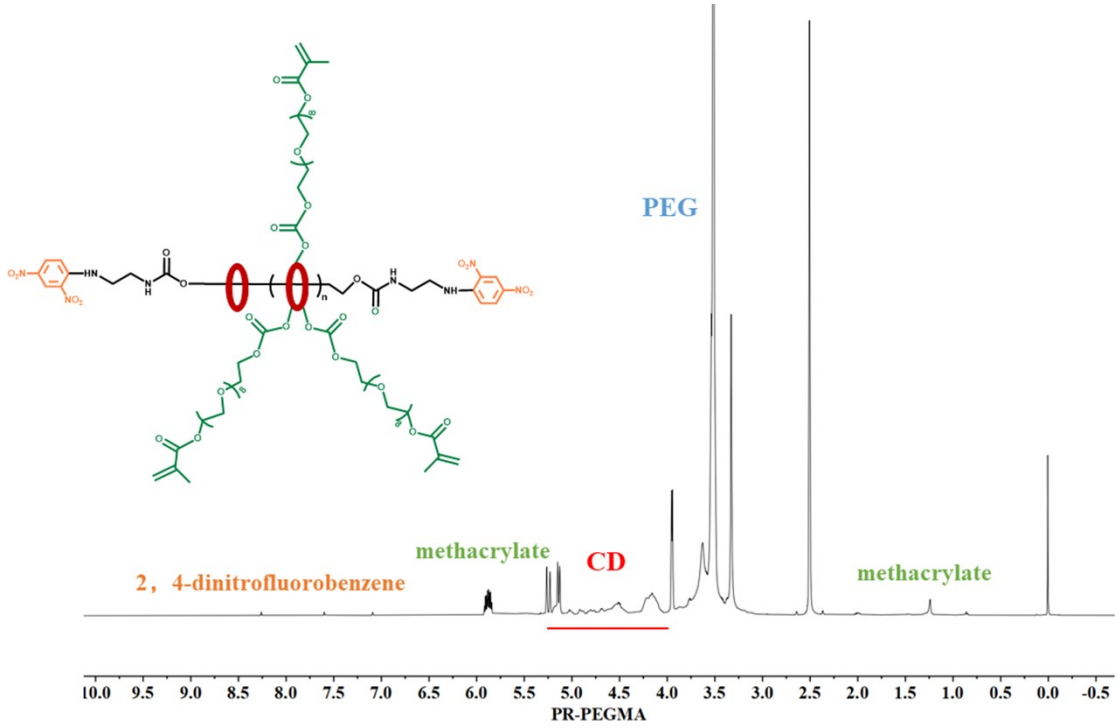

Fig. S4 ^{1}H NMR spectrum of PR-PEGMA in DMSO-d6. The NM signals at δ = 1.2, 5.9 ppm corresponded to hydrogen signals in methacrylates in PEGMA, proving that the PEGMA side chain was successfully attached to the CD molecule sliding on the PEG backbone by the formylation reaction on the PEG main chain, and the PR-PEGMA molecule was successfully synthesized.

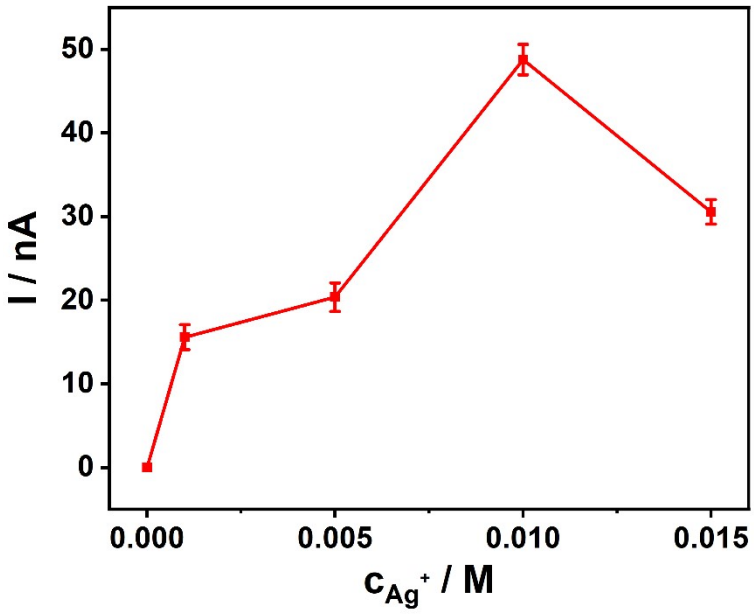

Fig. S5 Photocurrent responses of $AgInS_2$@Gel with different concentrations of Ag^+.

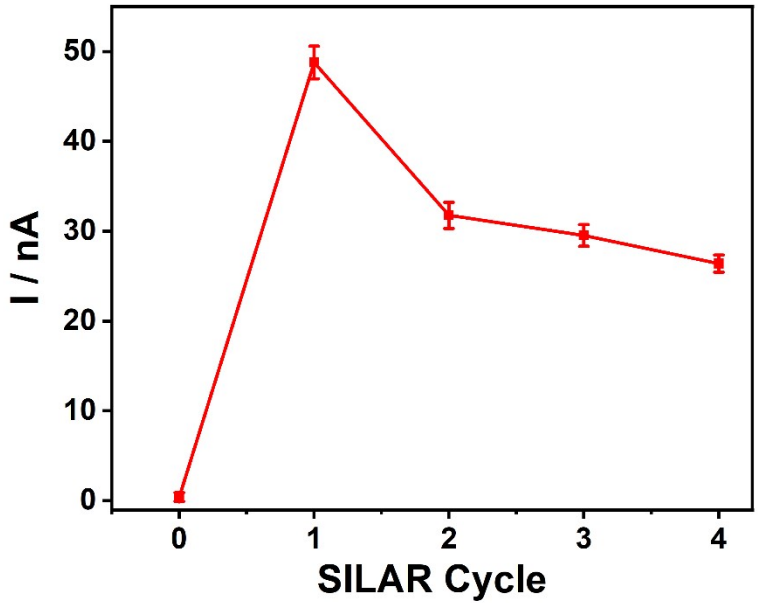

Fig. S6 Photocurrent response of $AgInS_2$@Gel with different SILAR cycle.

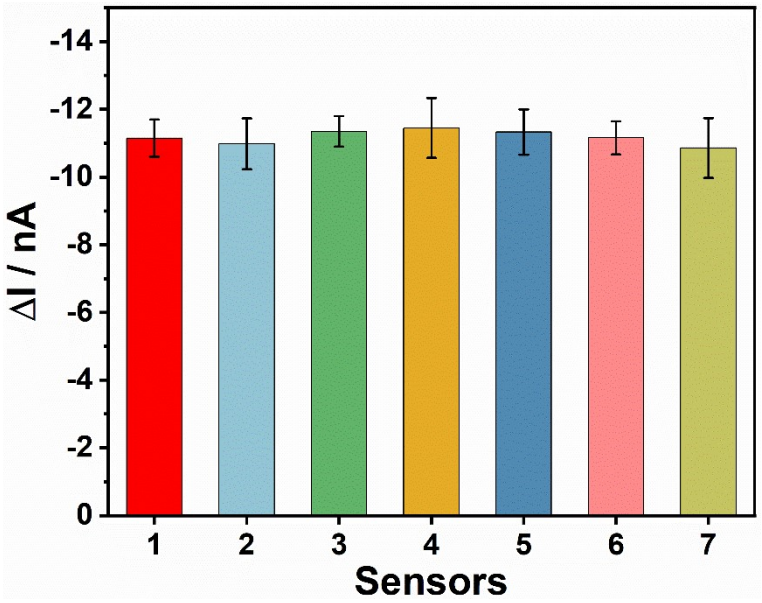

Fig. S7 Photocurrent Response of different $AgInS_2$@Gel biosensors to 100 nM DA.

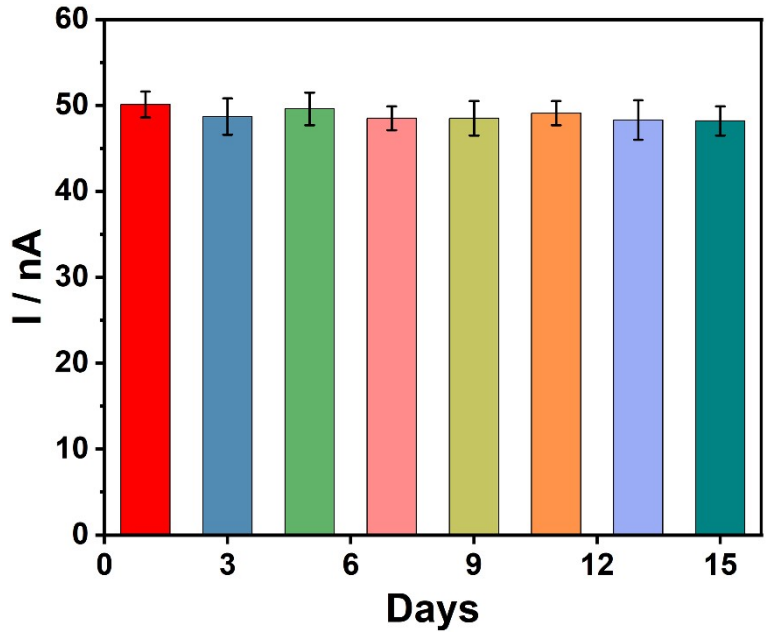

Fig. S8 Photocurrent of $AgInS_2$@Gel biosensor stored in PBS (10 mM, pH 7.4) solution for 15 days.

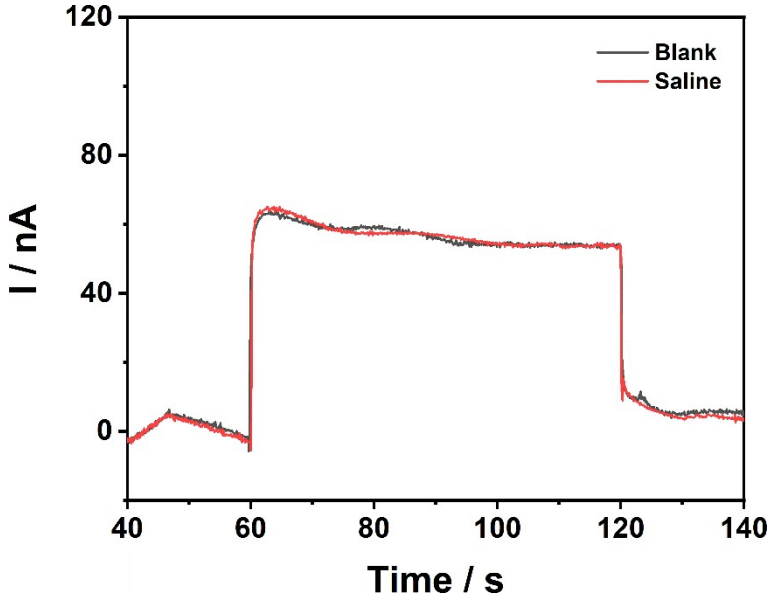

Fig. S9 Dynamic change of photocurrent of $AgInS_2$@hydrogel in the striatum after injection of NM-maleate (20 mg/kg).

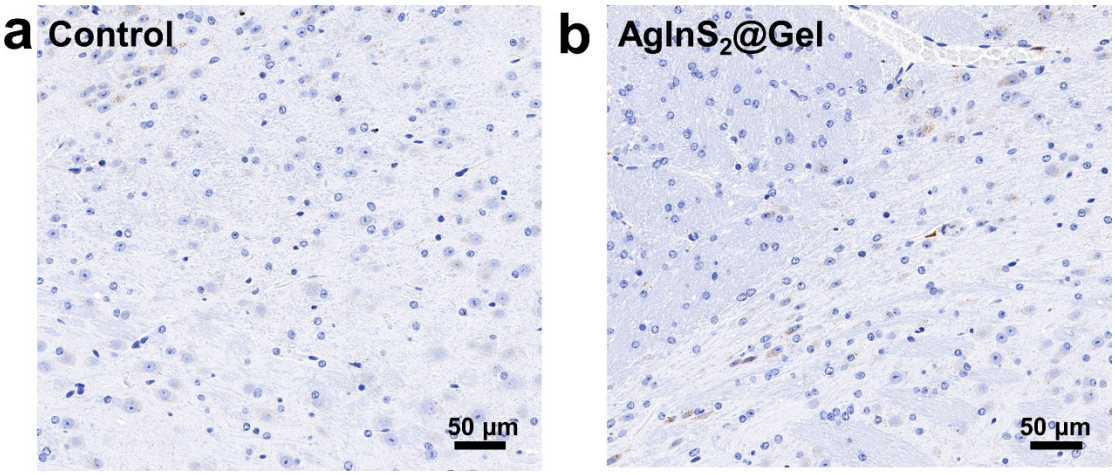

Fig. S10 Immunohistochemistry of Iba1 expression in brain tissue before and after PEC detection with $AgInS_2$@ hydrogel.

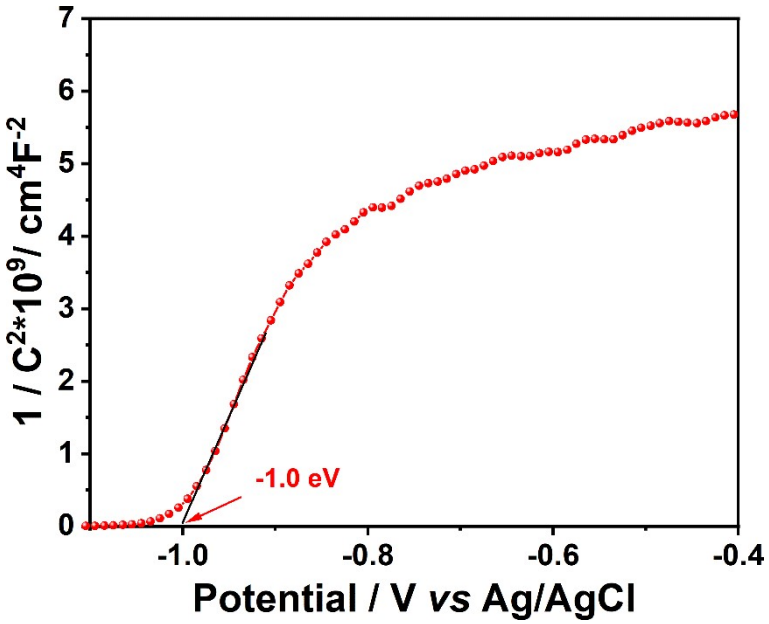

Fig. S11 Mott-Schottky curve of $AgInS_2$. Mott-Schottky analysis of $AgInS_2$ yielded a flat band potential of -1.0 V vs. Ag/AgCl (equivalent to -0.8 V vs. NHE after potential conversion), which is approximately equal to the position at the bottom of the conduction band (CB). The valence band (VB) position was then calculated as 1.43 V vs. NHE using the relationship $E_{VB} = E_{CB} + Eg$.