Electronic Supplementary Information:

Glucose oxidase, horseradish peroxidase and phenothiazine dyes-coadsorbed carbon felt-based amperometric flow-biosensor for glucose

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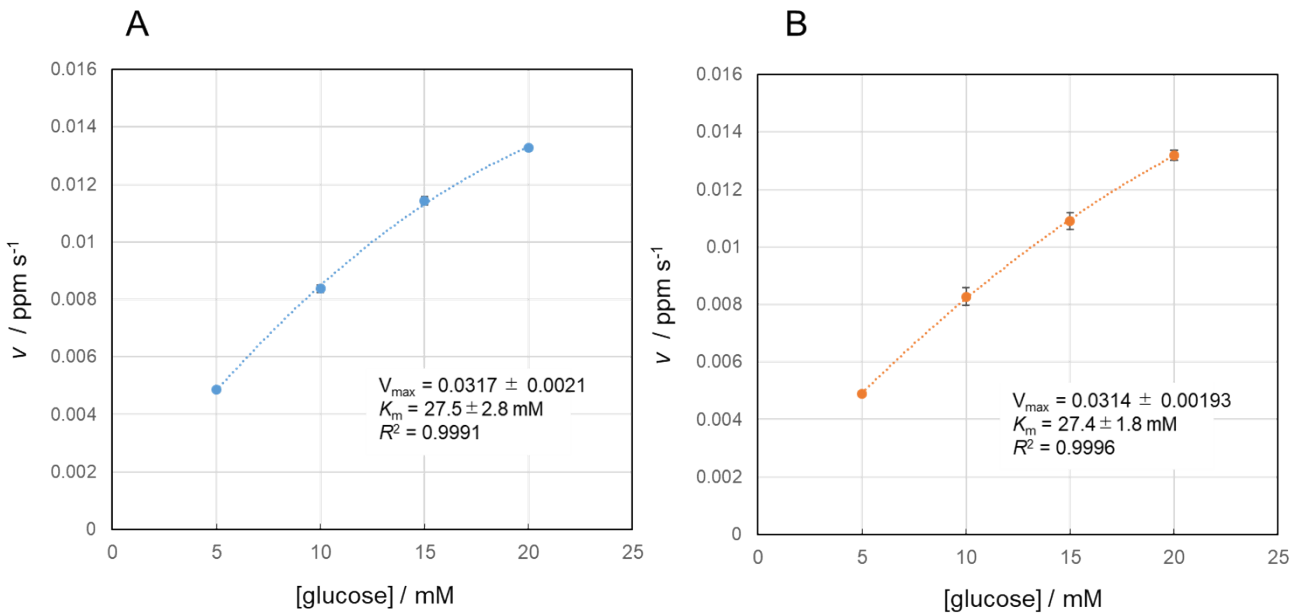

Fig. S1 Michaelis-Menten plots for the oxidation of glucose catalyzed by GOx without (panel A) and with the US-pretreatment (the US irradiation for 5 min) (panel B). The velocity (v) is an initial rate (400 s) of the decrease in dissolved oxygen measured by the O_2 meter after the addition of glucose in the GOx-dissolving air-saturate 0.1 M BR buffer (pH 5.0) with gentle stirring. [GOx] = 0.5 μg/mL. The values of V_{max} and K_m were calculated by the OriginPro software.

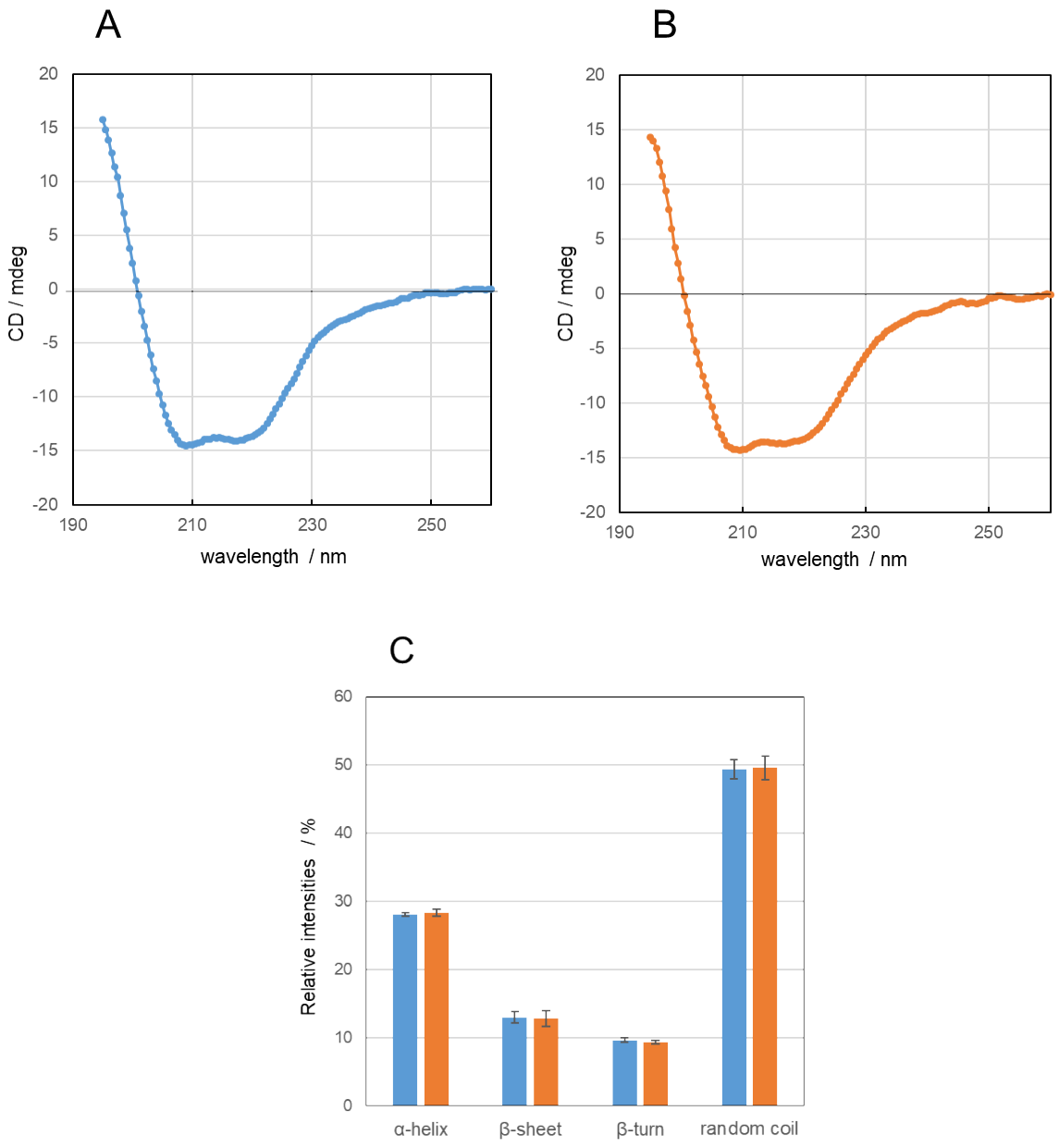

Fig. S2 (A and B) Circular dichroism (CD) spectra of GOx in aqueous solution without (panel A) and with the US-pretreatment (the US irradiation for 5 min) (panel B) at 25 ºC. [GOx] = 1.5 μM. (C) Relative amounts of α-helix, β-sheet, β-turn and random coil of GOx without (blue) and with the US-pretreatment (the US irradiation for 5 min) (orange). CD measurement conditions are same in panel A and B. The values are the average of three different GOx samples.

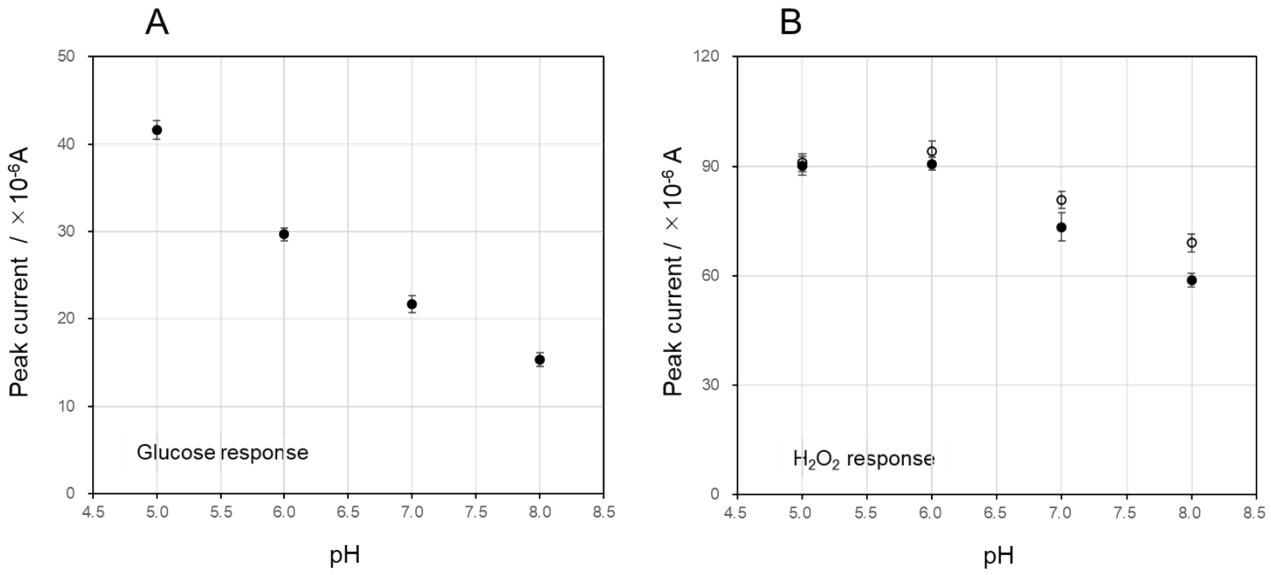

Fig. S3 (A) Effect of carrier pH upon the cathodic peak current responses to 10 mM glucose obtained by the GOx/MB-CF-reactor and HRP/TN-CF-detector-combined amperometric flow-biosensor for glucose. (B) Effect of carrier pH on the cathodic peak current responses to 30 μM H_2O_2 obtained by the GOx/MB-CF-reactor and HRP/HRP-CF-detector combined system (•), and that obtained by only HRP/TN-CF-based H_2O_2 detector (○) (without GOx/MB-CF-rector). The operational conditions are the same in Fig. 2A. Plots are the average of three individual sensor's responses.

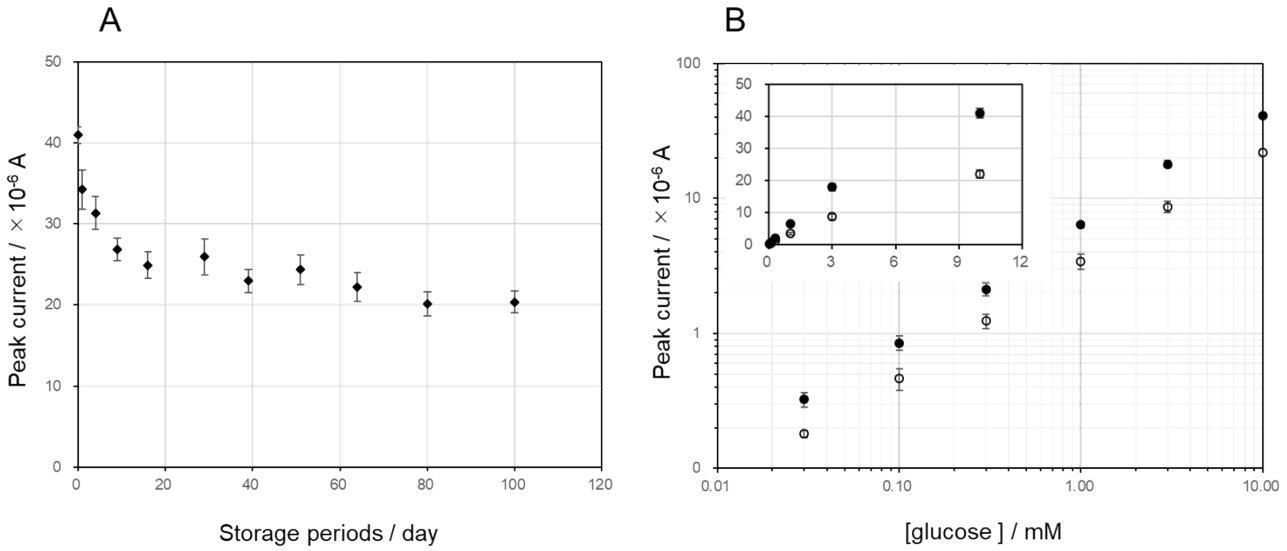

Fig. S4 (A) Long-term storage stability of the GOx/MB-CF-based reactor. Plots are the average of the peak current responses for 10 mM glucose obtained by three different GOx/MB-CF-reactors. The GOx/MB-CF was stored in 0.1 M BR buffer (pH 5.0) in refrigerator at 4 ºC. The HRP/TN-CF-detector was freshly prepared on each measurement day. (B) Comparison of the calibration curves obtained at initial day (•) and that obtained after 100 days' storage (○).