Electronic Supplementary Material (ESI) for Sensors & Diagnostics.

SUPPLEMENTARY INFORMATION

Enhanced Spin-Polarization and Detection Limit in a Spin-Based Optoelectrochemical DNA Hybridization Sensor Induced by Circularly Polarized Light.

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S1. The optical setup for generating L.P. and C.P. light

The real image of the optical setup and the components utilized in generating L.P. and C.P. light is shown in figure S1. The details of the experimental setup and analysis can be found in the materials and methods section as well.

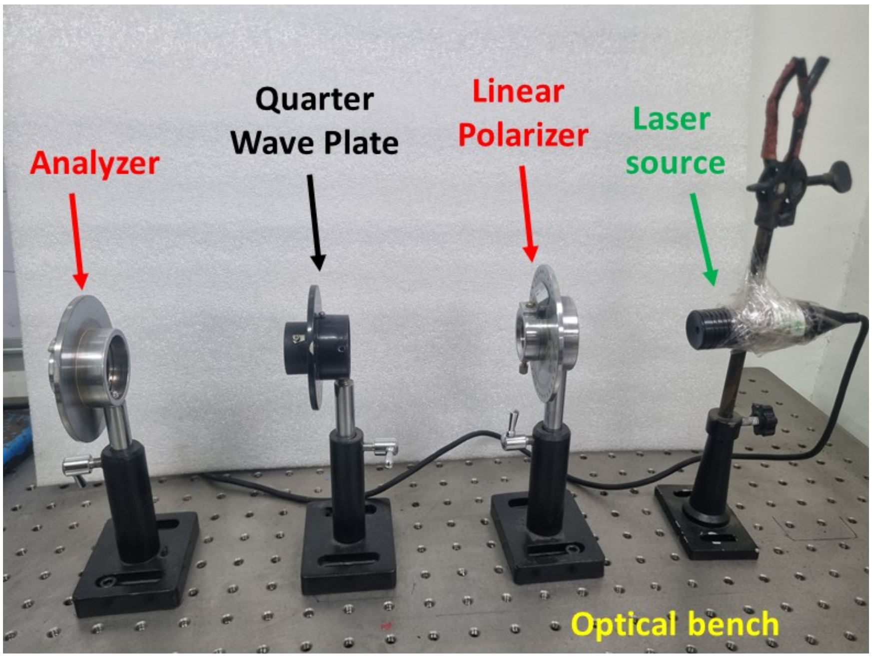

Fig. S1 Optical setup for generating linearly and circularly polarized light.

S2. Vibrating Sample Magnetometer (VSM) of CFA thin film

VSM was performed to examine the magnetic properties of the CFA thin film. Figure S2 shows the M-H curve obtained after the in-plane VSM characterization of CFA thin film. The magnetic field required for the saturation of the magnetization was calculated from the M-H curve and was found to be $H_s = 5$ kOe.

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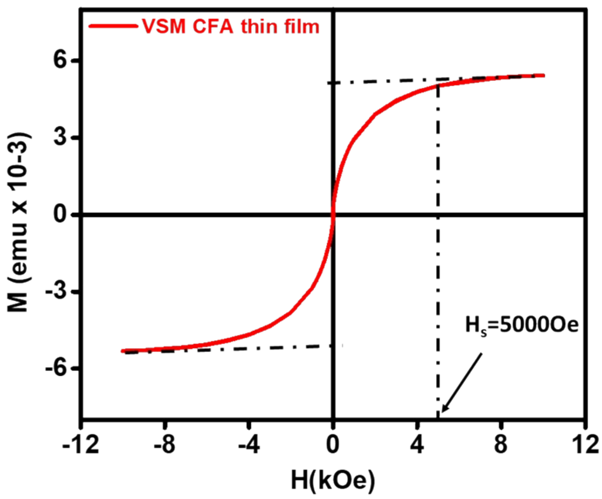

Fig. S2 Magnetization (M) v/s Applied field (H) curve of the CFA thin film.

S3. EIS of bare CFA thin film with Au overlayer (CFA/Au)

To calculate the relative charge transfer resistance (rR_{ct}) and reproducibility assessment**,** the charge transfer resistance of the bare CFA/Au thin film is required. For this, a bare Au-coated CFA electrode was used to perform EIS for spin-up and spin-down directions. Figure S3 represents the EIS of the bare CFA/Au electrode.

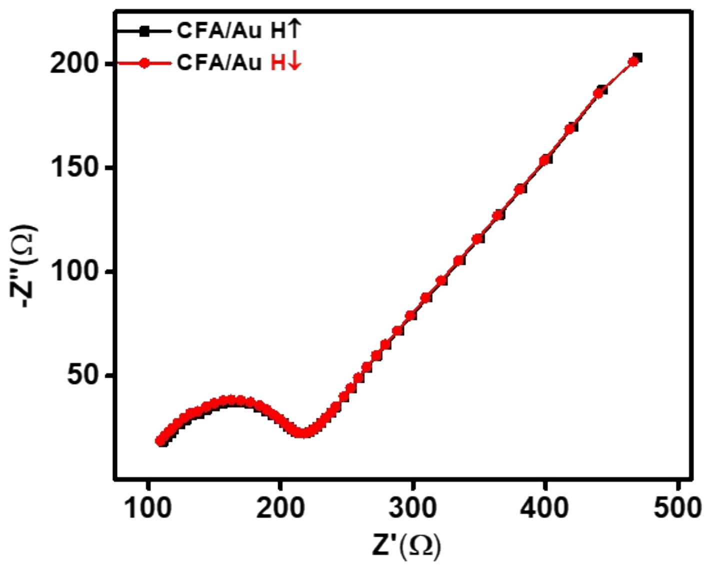

Fig. S3 Nyquist (EIS) plot of bare CFA/Au thin film in the presence of a magnetic field for spin-up and spin-down injection.