Electronic Supplementary Information (ESI)

Simple, Rapid and Sensitive Detection of Parkinson's Disease Related Alpha-Synuclein by DNA Aptamer Assisted Liquid Crystal Biosensor

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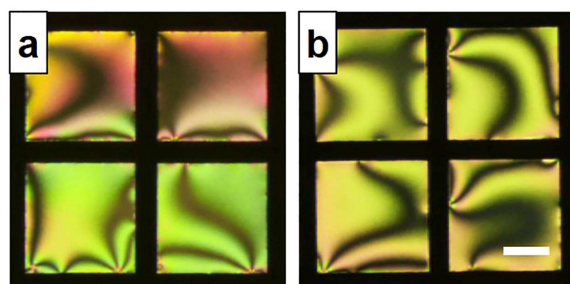
Fig. S1 Optical images (crossed polars) of LC-aqueous interface in the presence of 30 μL (a) PBS buffer or (b) 0.75 μM DNA aptamer for 10 min, respectively. The scale bar is 100 μm.
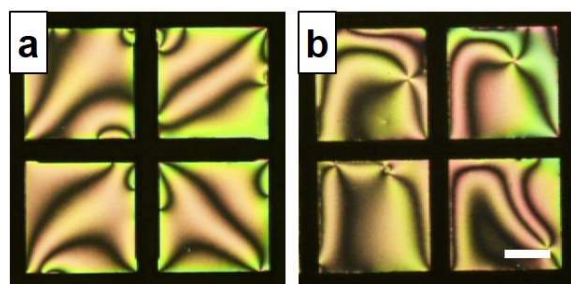
Fig. S2 Optical images (crossed polars) of LC-aqueous interface in the presence of 30 µL (a) PBS buffer or (b) 100 pM αS for 10 min, respectively. The scale bar is 100 µm.
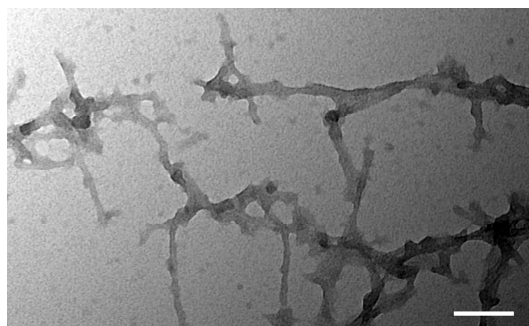
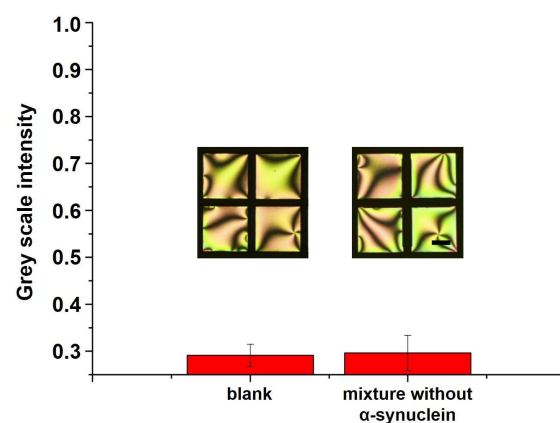**Fig. S3** The transmission electron microscopy characterization of αS fibrils. The scale bar is 100 nm.

Fig. S4 Grey scale intensity of blank, 100 pM mixture of proteins (αS, αS fibril, BSA, α-chymotrypsinogen A, α-lactalbumin and lysozyme at equal ratio) without αS and corresponding optical images (crossed polars). The scale bar is 100 μm.

Matlab Code Used for Characterization of Grey Scale Intensity

```matlab
file_path = 'C: ';% Image folder path
img_path_list = dir(strcat(file_path,'*.jpg'));% Get all JPG images in this folder
img_num = length(img_path_list);% Total number of images
Result_Value = zeros(img_num,1);% Preset blank array to give gray value of image
addpath(file_path);
i = 1;% Cycle the gray level of each image and assign it to the cells in the corresponding array
while i <= img_num
     Orig_Picture = imread (img_path_list(i).name);% Read image
     Gray_Picture = im2bw(Orig_Picture,0.2);% Graying color images
     Light_Pixel_Num = nnz (Gray_Picture);% Count the number of pixels in the non-blank area
     [ m, n] = size(Gray_Picture);% Measure the length and width pixel size of gray image
     Picture_Pixel_Num = m * n;% Number of pixels in grayscale image
     Result_Value(i,1)    = Light_Pixel_Num / Picture_Pixel_Num;% Calculate the proportion of
non-blank area in the image
     i= i + 1;
end
```