

### **Supplementary Information**

#### **Cold atmospheric plasma driven self-assembly in serum proteins: Insights into the protein aggregation to biomaterials**

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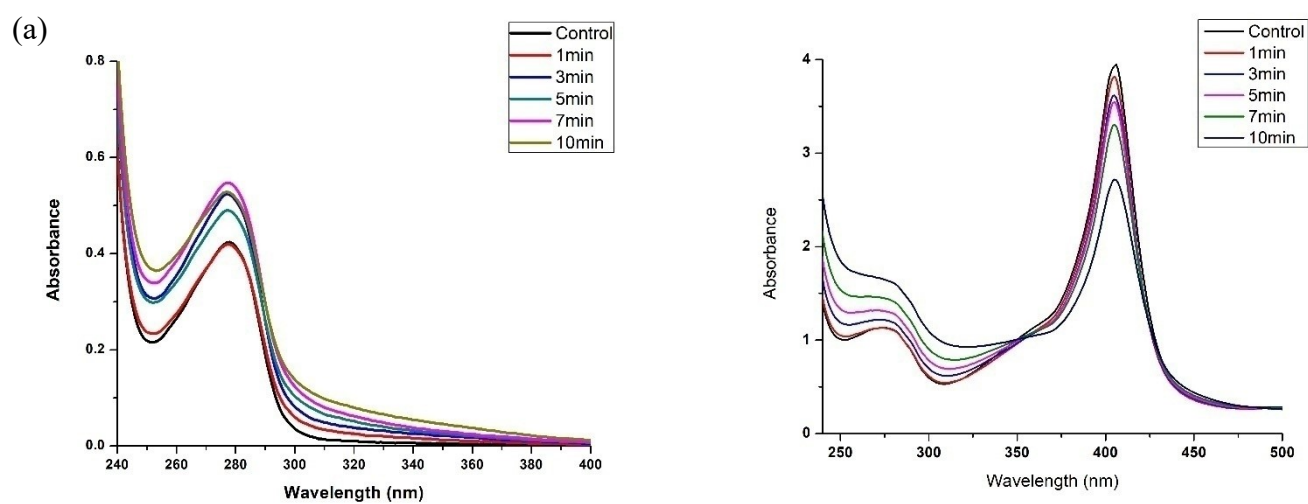


Figure S1 Ultra-Violet Visible Spectroscopy of control and plasma treated (a) BSA and (b) Hb

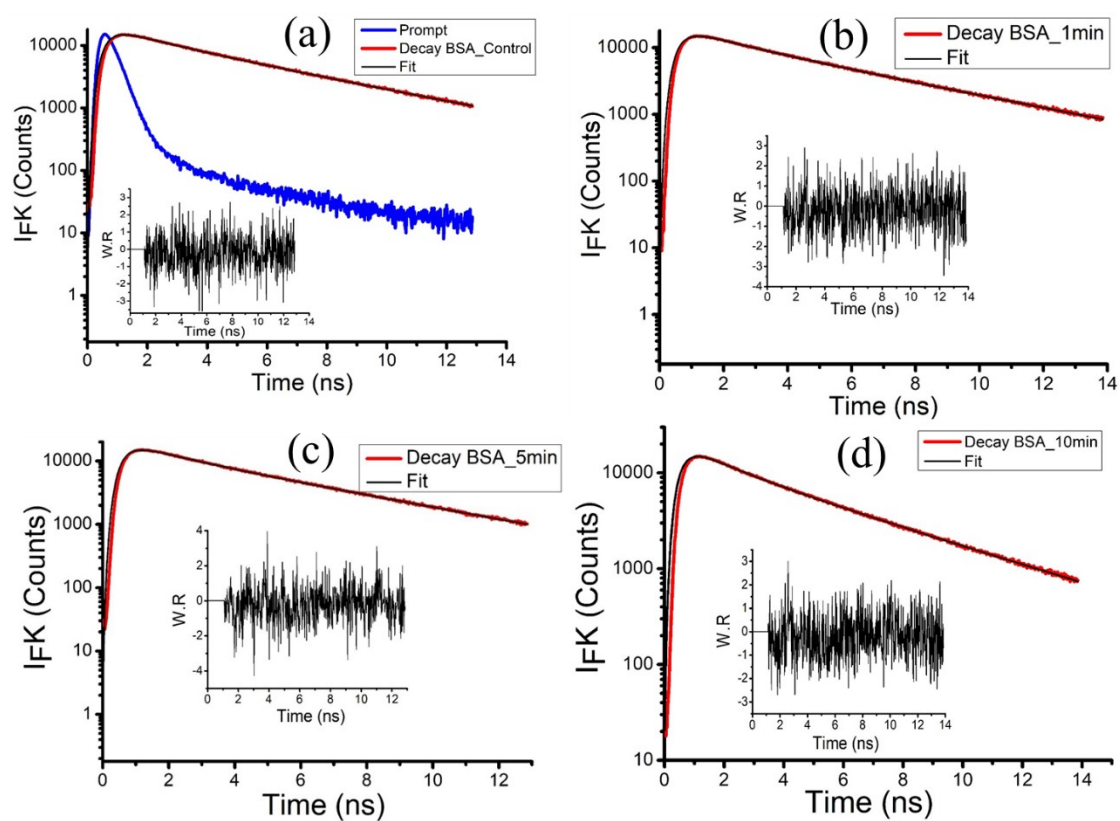


Fig S2: Time resolved spectra of BSA and CAP treated BSA

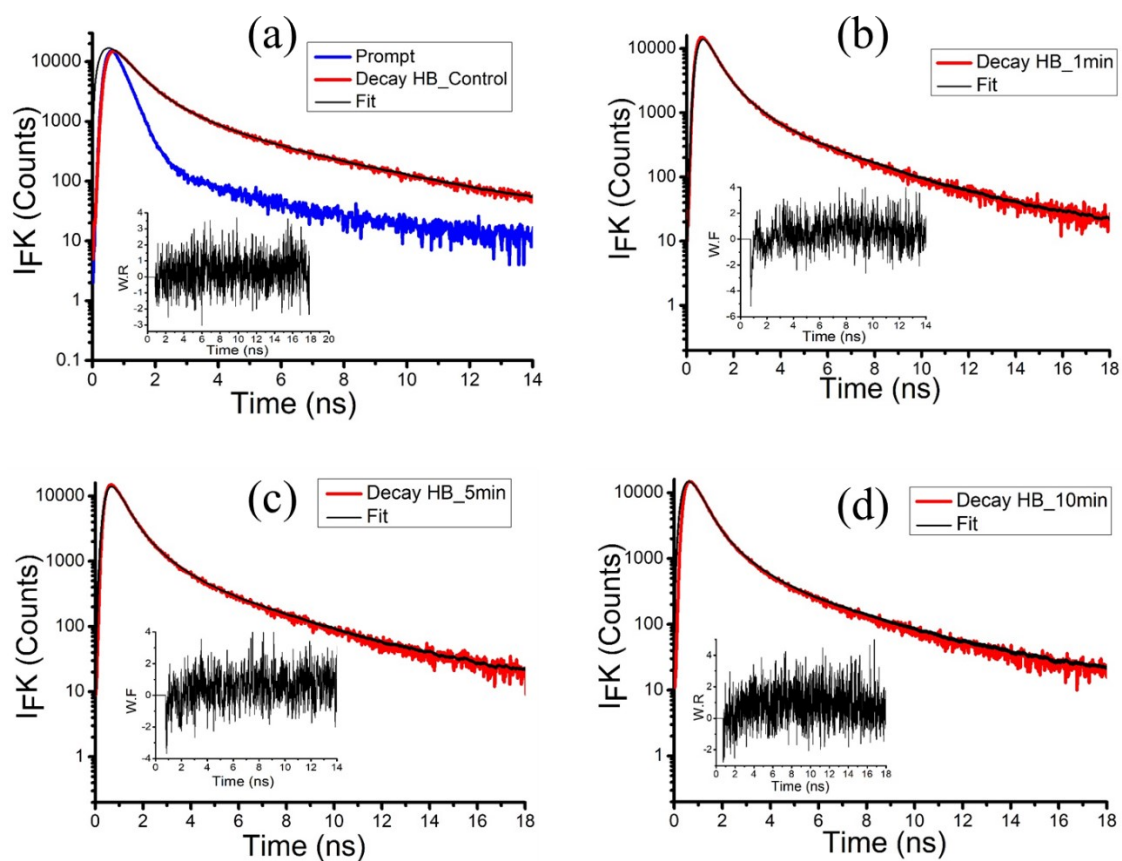


Fig S3: Time resolved spectra of Hb and CAP treated Hb

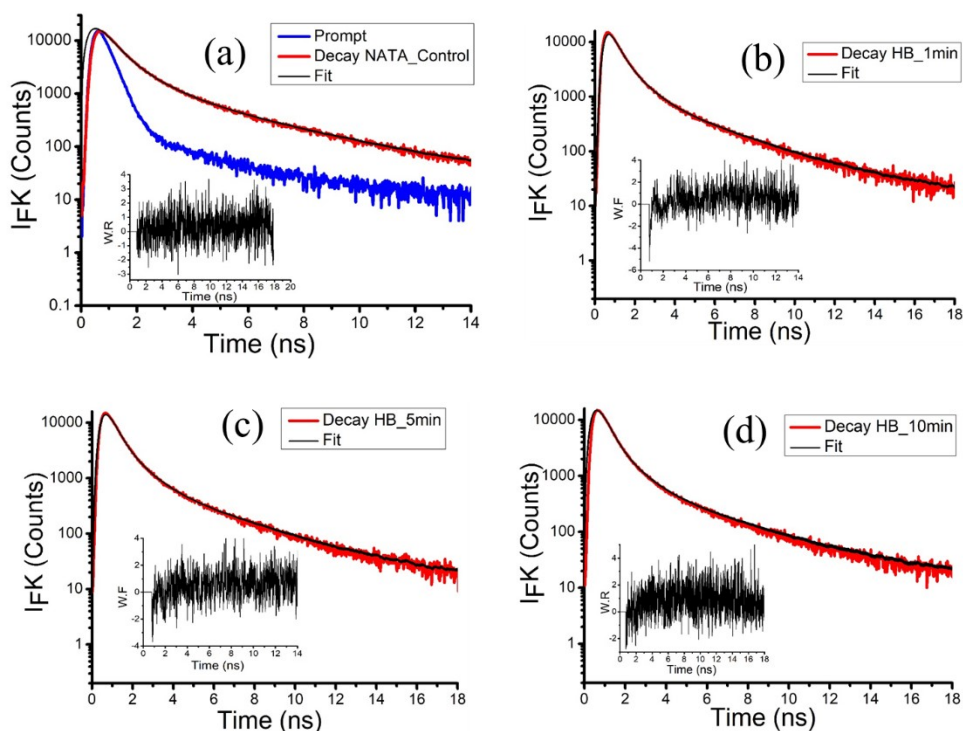


Fig S4: Time resolved spectra of NATA and CAP treated NATA

**Table S1 - Lifetime of BSA at different time of plasma treatment**

Treatment time (Min)	$\tau_1$ (ns)	% population	$\tau_2$ (ns)	% population
0	$2.170 \pm 0.009$	27.30	$6.217 \pm 0.004$	72.70
1	$2.117 \pm 0.008$	29.74	$6.280 \pm 0.004$	70.26
3	$2.085 \pm 0.008$	29.39	$6.327 \pm 0.004$	70.61
5	$2.058 \pm 0.008$	29.59	$6.258 \pm 0.004$	70.41
7	$2.092 \pm 0.008$	31.34	$6.250 \pm 0.004$	68.66
10	$2.048 \pm 0.007$	32.54	$6.064 \pm 0.003$	67.46

**Table S2 - Lifetime of Hb at different time of plasma treatment**

Treatment Time (Min)	$\tau_1$ (ns)	% population	$\tau_2$ (ns)	% population	$\tau_3$ (ns)	% population
0	$0.418 \pm 0.001$	73.97	$1.263 \pm 0.002$	22.87	$4.418 \pm 0.009$	3.17
1	$0.212 \pm 0.000$	86.50	$1.201 \pm 0.002$	11.17	$4.598 \pm 0.010$	1.45
3	$0.216 \pm 0.001$	84.50	$1.184 \pm 0.002$	14.30	$4.658 \pm 0.011$	1.60
5	$0.260 \pm 0.001$	84.65	$1.207 \pm 0.002$	13.84	$4.653 \pm 0.012$	1.53
7	$0.268 \pm 0.001$	83.35	$1.163 \pm 0.002$	15.80	$4.586 \pm 0.012$	1.55
10	$0.280 \pm 0.001$	85.95	$1.198 \pm 0.002$	12.26	$4.672 \pm 0.012$	1.35

**Table S3 - Lifetime of NATA at different time of plasma treatment**

Treatment Time (min)	$\tau_1$ (ns)	% population
0	$3.153 \pm 0.002$	100
1	$3.125 \pm 0.002$	100
5	$3.070 \pm 0.002$	100
10	$3.022 \pm 0.002$	100

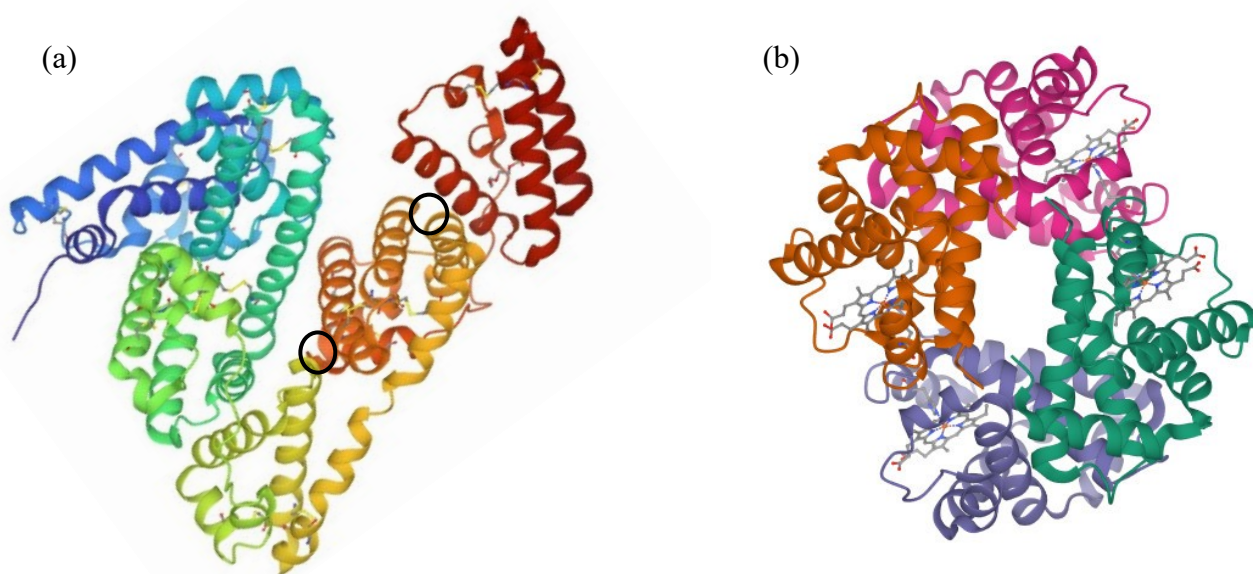


Figure S5 - Structure of (a) BSA with the Trp located in the position 213 and 134 marked in black circles. (Ref: PDB 4F5S) (b) Hemoglobin with the porphyrins and the six tryptophan residues ( $\alpha$ 14,  $\beta$ 15 and  $\beta$ 37 in each dimer) Ref: 1HDA.