A Direct Comparison of Antibody and nanoMIP Affinities using Surface Plasmon Resonance and Electrochemical Techniques: A Haemoglobin Model
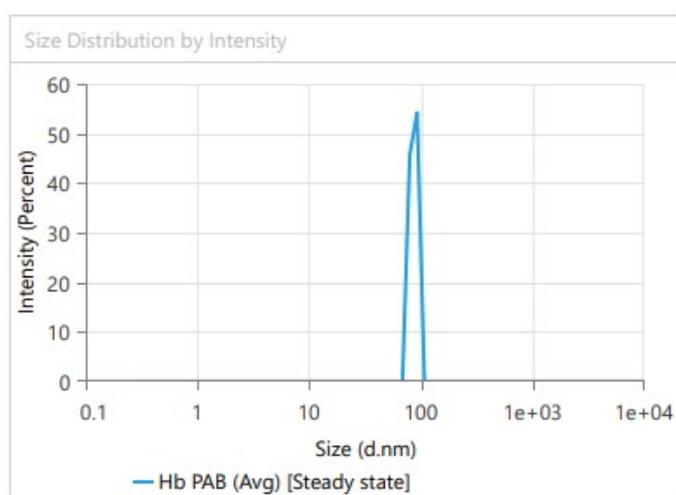
Andrei N Stephen[+], Barbara V Boldrin[+] and Subrayal M Reddy[*]

Centre for Smart Materials, University of Lancashire, Preston, PR1 2HE, United Kingdom
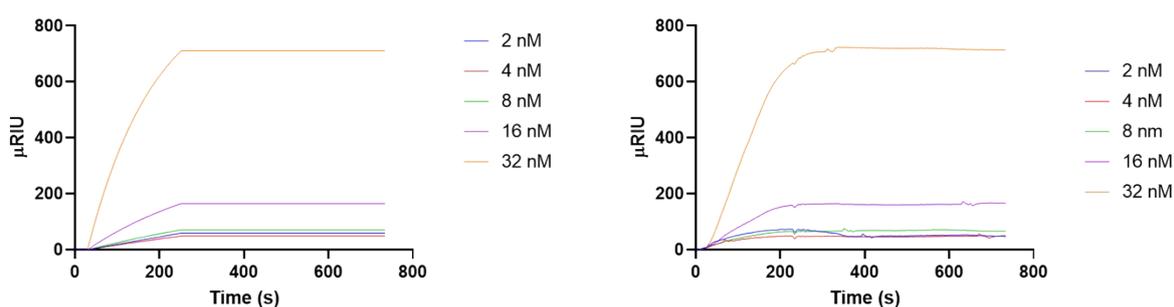
*Corresponding author: smreddy@lancashire.ac.uk

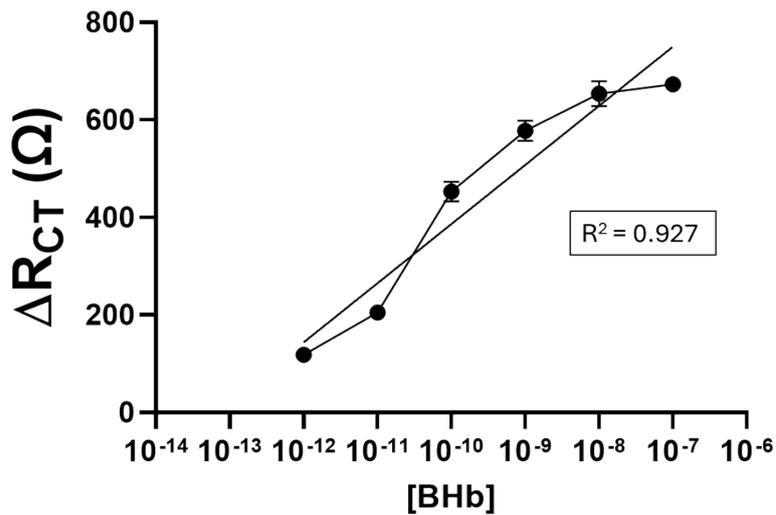[+] These two authors contributed equally to this work.
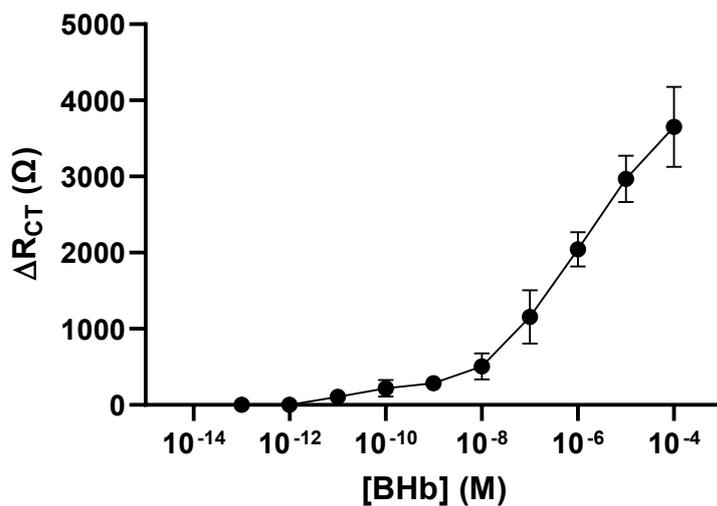
Supplementary

Supplementary Figure S1: DLS spectrum of Hb pAb showing average hydrodynamic particle size of 86 ± 20 nm and homogenous size distribution.

Supplementary Figure S2. Fitted (left) and unfitted (right) data generated by TraceDrawer Software.

Supplementary Figure S3. Linear range (from 1 pM to 100 nM) of target binding to BHb nanoMIP modified electrodes.

Supplementary Figure S4: EIS response of Hb pAb modified electrode to a wide full range of target (BHb) concentration, from 100 fM to 100 μM, showing saturation between 10^{-10} and 10^{-9} followed by an increase in signal to higher target concentrations.

Material	K_{on} (k_a (1/M*s))	K_{off} (k_d(1/s))	Dissociation constant (M)
BHb PAb	$1.35*10^5$	$6.58*10^{-3}$	$4.87*10^{-8}$
BHb nanoMIP	$4.91*10^4$	$1.50*10^{-7}$	$3.06*10^{-12}$

Supplementary Table S1: on and off rate constants determined by SPR for BHb nanoMIP and Pabs.