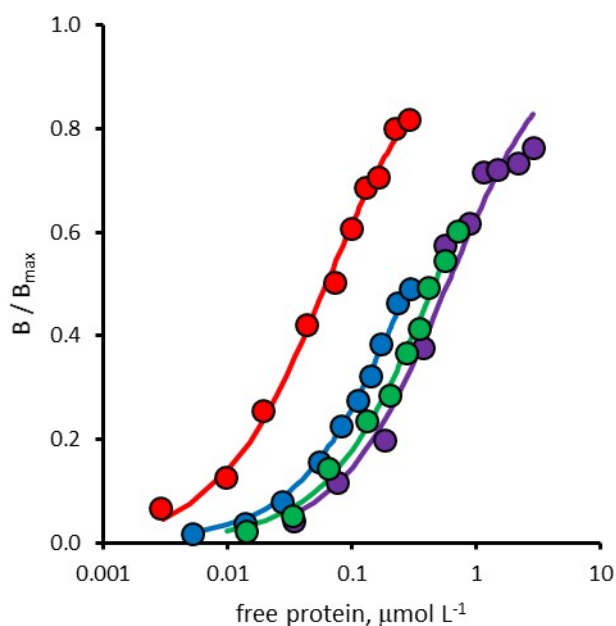


Rabbit IgG-imprinted nanoMIPs by solid phase synthesis: Effect of cross-linker on affinity and selectivity

Matteo Chiarello, Laura Anfossi, Simone Cavalera, Fabio Di Nardo, Thea Serra, Fabrizio Sordello and Claudio Baggiani

Electronic Supplementary Information

1 - Binding isotherms for RIgG, BIgG, BSA and LZM on RIgG-imprinted (nanoMIP) nanoparticles. Red circles: RIgG, blue



circles: BIgG, green circles: BSA, violet circles: LZM

nanoMIP_BIS_RIgG

r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value	
0.9955609421			0.9942926398	0.0266516688	1794.1841934	
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	1.377274791	0.037683061	36.54891001	1.290377497	1.464172084	0.00000
Keq	16.01832692	1.292868444	12.38975782	13.03696694	18.99968689	0.00000

nanoMIP_BIS_BIgG

r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value	
0.9958961573			0.9947236308	0.0232580876	1941.3924663	
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	1.990924515	0.148410199	13.41501142	1.648689983	2.333159047	0.00000
Keq	3.495325414	0.425948327	8.205984614	2.513086813	4.477564016	0.00004

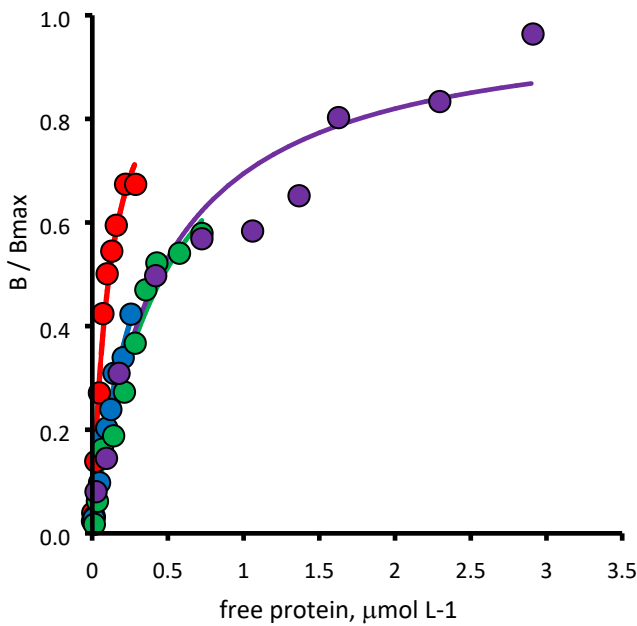
nanoMIP_BIS_BSA

r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value	
0.9944750936			0.9928965489	0.0159539286	1439.9883215	
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	0.995934195	0.062710797	15.88138323	0.851322838	1.140545551	0.00000
Keq	2.169608406	0.257557033	8.423797932	1.575680822	2.763535990	0.00003

nanoMIP_BIS_LZM

r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value	
0.9710010189			0.9627155957	1.0657038121	267.87176134	
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	21.13218042	1.454638384	14.52744589	17.77777829	24.48658254	0.00000

Keq 1.697361228 0.340091057 4.990902268 0.913109845 2.481612612 0.00106



nanoMIP_EDAM_RlgG

r ² Coef Det	DF Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9761590939	0.9693474065	0.0700554202	327.55771651			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	1.702104253	0.161851791	10.51643757	1.328873355	2.075335152	0.00001
Keq	8.811099464	1.893651688	4.652967343	4.444330846	13.17786808	0.00164

nanoMIP_EDAM_BlgG

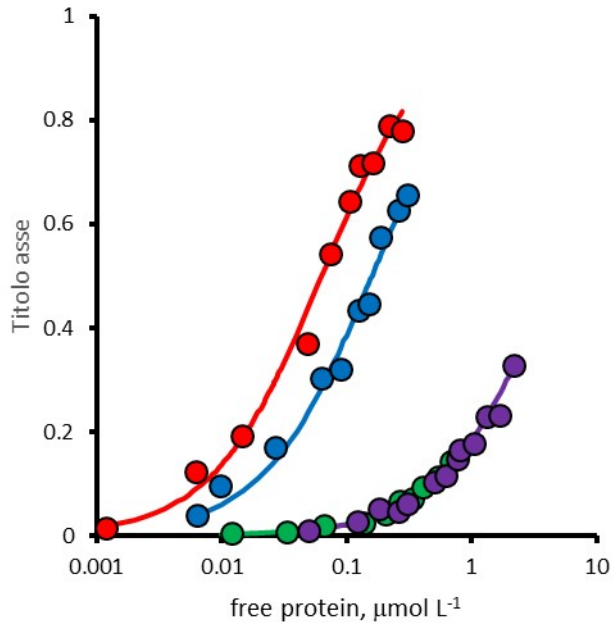
r ² Coef Det	DF Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9863991244	0.9818654992	0.0349002073	507.67274786			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	1.985686402	0.327403270	6.064955929	1.211500692	2.759872113	0.00051
Keq	3.287018725	0.820978999	4.003779302	1.345711876	5.228325573	0.00517

nanoMIP_EDAM_BSA

r ² Coef Det	DF Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9749714545	0.9678204415	0.0395049369	311.63503394			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	1.140833240	0.155569288	7.333280588	0.782089819	1.499576661	0.00008
Keq	2.106018704	0.541369205	3.890170853	0.857619079	3.354418329	0.00461

nanoMIP_EDAM_LZM

r ² Coef Det	DF Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9475420646	0.9325540831	0.9436922435	144.50314267			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	13.25958780	1.021490057	12.98063325	10.90402751	15.61514810	0.00000
Keq	2.273551724	0.611126169	3.720265699	0.864292253	3.682811195	0.00587



nanoMIP_NOBE_RlgG

r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9878146269	0.9843330918	0.0505354209	648.52483204			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	1.484379463	0.076725657	19.34658533	1.307449781	1.661309144	0.00000
Keq	15.88673540	2.461783227	6.453344563	10.20985311	21.56361770	0.00020

nanoMIP_NOBE_BlgG

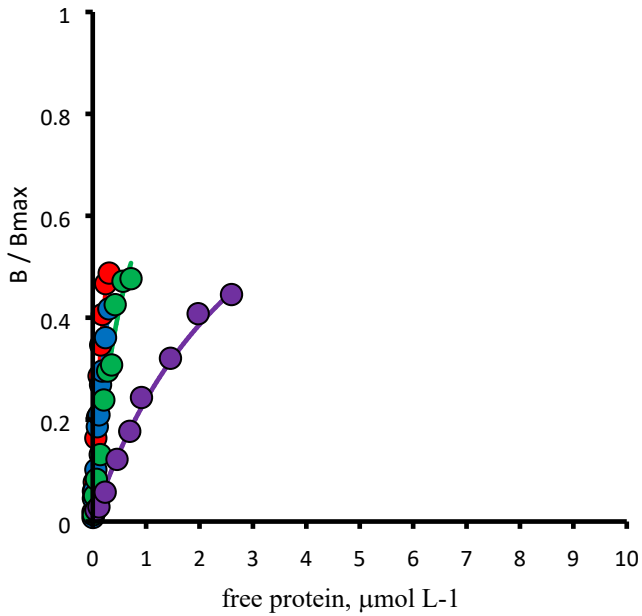
r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9919092583	0.9892123444	0.0409593544	858.18644139			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	1.541653355	0.069518336	22.17621191	1.377268611	1.706038098	0.00000
Keq	12.74992867	1.522981118	8.371691886	9.148650587	16.35120675	0.00007

nanoMIP_NOBE_BSA

r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9861087447	0.9821398146	0.1732938812	567.90187741			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	16.02085425	6.240091583	2.567406910	1.631177274	30.41053123	0.03326
Keq	0.577523519	0.276923781	2.085496297	-0.06106386	1.216110902	0.07051

nanoMIP_NOBE_LZM

r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9817980198	0.9781576237	0.5718387295	593.32985091			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	43.02060181	9.573777589	4.493586927	21.94885940	64.09234423	0.00091
Keq	0.223681210	0.065173962	3.432064040	0.080234288	0.367128133	0.00560



nanoMIP_EDMA_RIgG

r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value		
0.9892292702			0.9861519189	0.0236228046	734.75375669		
Parm	Value		Std Error	t-value	95% Confidence Limits		P> t
Bmax	1.244664039		0.147343530	8.447361340	0.904889250	1.584438828	0.00003
Keq	3.388792639		0.660409848	5.131347826	1.865884800	4.911700478	0.00089

nanoMIP_EDMA_BlgG

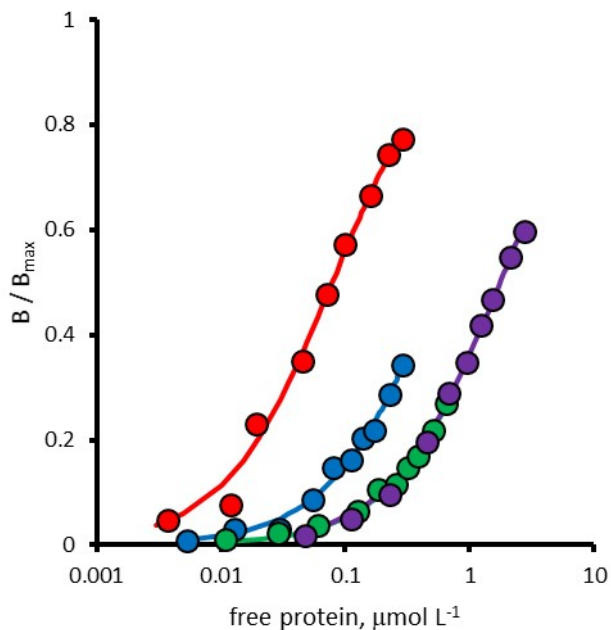
r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value		
0.9932427726			0.9913121363	0.0224960081	1175.9175424		
Parm	Value		Std Error	t-value	95% Confidence Limits		P> t
Bmax	1.843398159		0.233889627	7.881487459	1.304047713	2.382748604	0.00005
Keq	2.367787795		0.441527923	5.362713600	1.349622581	3.385953010	0.00068

nanoMIP_EDMA_BSA

r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value		
0.9768346405			0.9702159664	0.0505196448	337.34322678		
Parm	Value		Std Error	t-value	95% Confidence Limits		P> t
Bmax	1.793187328		0.321457904	5.578295964	1.051904073	2.534470583	0.00052
Keq	1.436263381		0.422091589	3.402729215	0.462918433	2.409608330	0.00932

nanoMIP_EDMA_LZM

r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value		
0.9940061562			0.9920082083	0.6680323468	1160.8649363		
Parm	Value		Std Error	t-value	95% Confidence Limits		P> t
Bmax	50.10489384		5.926054478	8.455017419	36.09200173	64.11778595	0.00006
Keq	0.315123536		0.057408067	5.489185630	0.179375029	0.450872043	0.00092



nanoMIP_GDMA_RIgG

r ²	Coef Det	DF	Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9919092583			0.9892123444	0.0409593544	858.18644139			
Parm	Value		Std Error	t-value				
Bmax	1.541653355		0.069518336	22.17621191	1.377268611	1.706038098		0.00000
Keq	12.74992867		1.522981118	8.371691886	9.148650587	16.35120675		0.00007

nanoMIP_GDMA_BlgG

r ²	Coef Det	DF	Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9897824381			0.9868631347	0.0412233005	774.96565061			
Parm	Value		Std Error	t-value				
Bmax	3.389852076		0.711088070	4.767133943	1.750080047	5.029624104		0.00141
Keq	1.779035815		0.503076050	3.536315862	0.618940365	2.939131264		0.00766

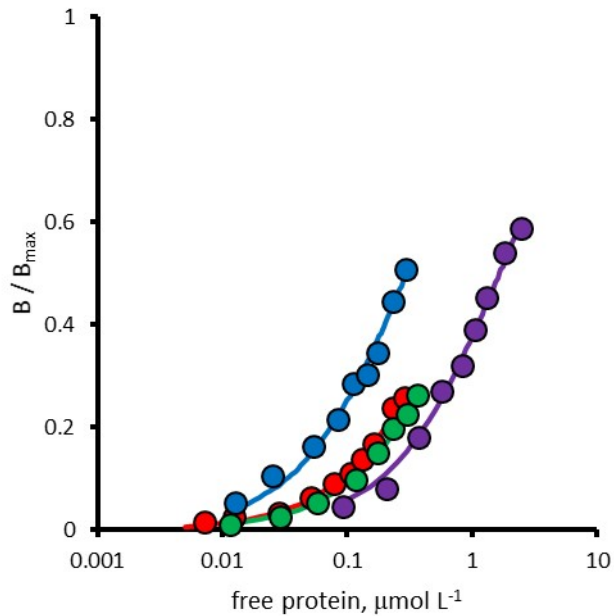
nanoMIP_GDMA_BSA

r ²	Coef Det	DF	Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9936525051			0.9918389352	0.0722714346	1252.3397328			
Parm	Value		Std Error	t-value				
Bmax	9.937853368		2.209129290	4.498538594	4.843592097	15.03211464		0.00201
Keq	0.556319023		0.154933782	3.590688972	0.199041081	0.913596965		0.00708

nanoMIP_GDMA_LZM

r ²	Coef Det	DF	Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9976828314			0.9970207832	0.3358295725	3444.4893313			
Parm	Value		Std Error	t-value				
Bmax	31.63808539		1.292211017	24.48368338	28.65824145	34.61792934		0.00000
Keq	0.568918263		0.043635104	13.03808641	0.468295532	0.669540994		0.00000

2 - Binding isotherms for RIgG, BIgG, BSA and LZM on not-imprinted (nanoNIP) nanoparticles. Red circles: RIgG, blue circles: BIgG, green circles: BSA, violet circles: LZM



nanoNIP_BIS_RIgG

r^2	Coef Det	DF Adj r^2	Fit Std Err	F-value		
0.9935973540		0.9917680266	0.0369947660	1241.4834254		
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	5.069455517	1.108395511	4.573688242	2.513490888	7.625420146	0.00182
Keq	1.252268357	0.343045520	3.650443701	0.461203971	2.043332743	0.00649

nanoNIP_BIS_BIgG

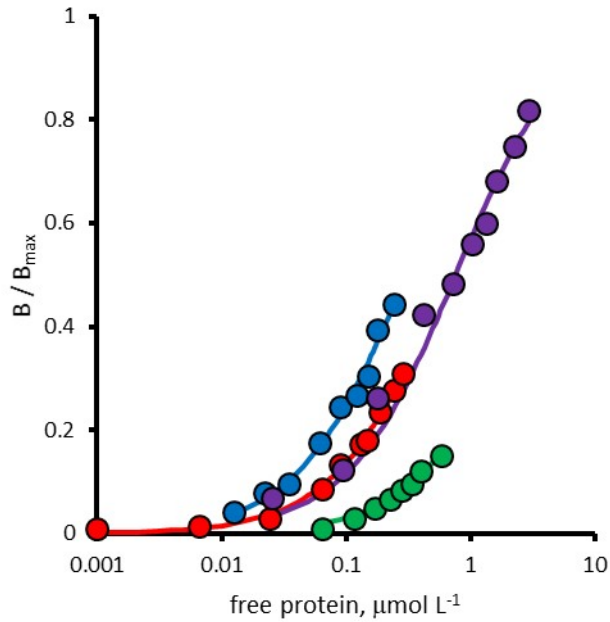
r^2	Coef Det	DF Adj r^2	Fit Std Err	F-value		
0.9876433743		0.9835244990	0.0346859740	559.49769511		
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	1.924113293	0.233641727	8.235315314	1.371638400	2.476588186	0.00008
Keq	3.368604667	0.663191218	5.079386725	1.800406633	4.936802700	0.00143

nanoNIP_BIS_BSA

r^2	Coef Det	DF Adj r^2	Fit Std Err	F-value		
0.9975763069		0.9966068297	0.0432321291	2469.5609699		
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	8.486546696	1.453566767	5.838429228	4.929796950	12.04329644	0.00111
Keq	0.993919092	0.216320151	4.594667158	0.464602752	1.523235432	0.00371

nanoNIP_BIS_LZM

r^2	Coef Det	DF Adj r^2	Fit Std Err	F-value		
0.9935844413		0.9914459217	0.7378115771	1084.0974891		
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	44.69705654	3.044432725	14.68157144	37.49811710	51.89599599	0.00000
Keq	0.603678649	0.075235226	8.023883030	0.425775611	0.781581688	0.00009



nanoNIP_EDAM_RlgG

r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9955676899	0.9943013156	0.0188442886	1796.9278612			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	2.437163837	0.394927532	6.171167211	1.526459316	3.347868358	0.00027
Keq	1.578896042	0.338466660	4.664849537	0.798390526	2.359401559	0.00161

nanoNIP_EDAM_BlgG

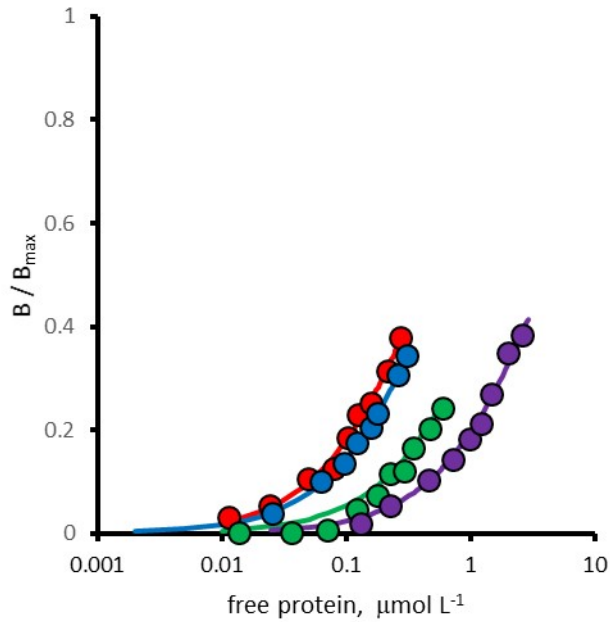
r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9804659178	0.9739545571	0.0938042065	351.34803645			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	4.533775210	1.019175807	4.448472166	2.123807384	6.943743036	0.00298
Keq	2.750418717	0.907280224	3.031498585	0.605041899	4.895795535	0.01907

nanoNIP_EDAM_BSA

r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9848813275	0.9788338585	0.1793349335	390.86024087			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	28.60319290	17.52565758	1.632075303	-14.2805463	71.48693211	0.15378
Keq	0.318584116	0.220544101	1.444537009	-0.22106786	0.858236090	0.19871

nanoNIP_EDAM_LZM

r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9774894421	0.9710578541	0.6393522324	347.38879235			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	15.60975626	1.047209334	14.90605150	13.19488721	18.02462531	0.00000
Keq	1.318338021	0.243065369	5.423800298	0.757828276	1.878847767	0.00063



nanoNIP_NOBE_RlgG

r ² Coef Det	DF Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9914702085	0.9886269446	0.0470866604	813.65311506			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	4.063085417	0.642535017	6.323523712	2.543731535	5.582439299	0.00040
Keq	2.197782127	0.486359371	4.518844006	1.047724966	3.347839288	0.00274

nanoNIP_NOBE_BlgG

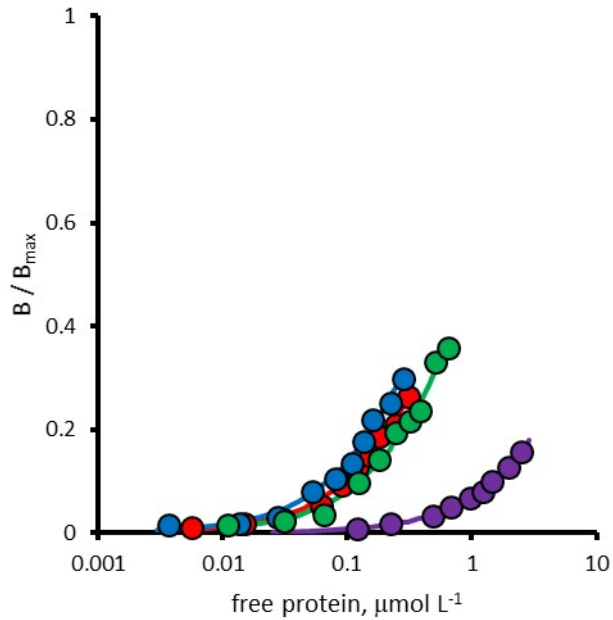
r ² Coef Det	DF Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9987210711	0.9982094995	0.0275383285	4685.4257907			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	6.984587055	0.451673546	15.46379486	5.879381704	8.089792407	0.00000
Keq	1.699370198	0.149829457	11.34203003	1.332750725	2.065989671	0.00003

nanoNIP_NOBE_BSA

r ² Coef Det	DF Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9918197508	0.9894825367	0.0567562986	969.96531519			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	12.58880487	6.553907290	1.920809117	-2.52453242	27.70214217	0.09100
Keq	0.245059118	0.143190437	1.711420983	-0.08513862	0.575256856	0.12537

nanoNIP_NOBE_LZM

r ² Coef Det	DF Adj r ²	Fit Std Err	F-value	95% Confidence Limits		P> t
0.9903943048	0.9871924065	0.7065239613	721.73434806			
Parm	Value	Std Error	t-value	95% Confidence Limits		P> t
Bmax	53.48053553	9.114517051	5.867621426	31.92812751	75.03294356	0.00062
Keq	0.243597396	0.058630192	4.154811528	0.104959023	0.382235768	0.00427



nanoNIP_EDMA_RlgG

r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value		
0.9910998682	0.9885569734	0.0216034335	890.86309216		
Parm	Value	Std Error	t-value	95% Confidence Limits	
Bmax	2.451135365	0.667307443	3.673172527	0.912321645	3.989949085
Keq	1.150705736	0.391433550	2.939721789	0.248058352	2.053353120
					P> t
					0.00628
					0.01872

nanoNIP_EDMA_BlgG

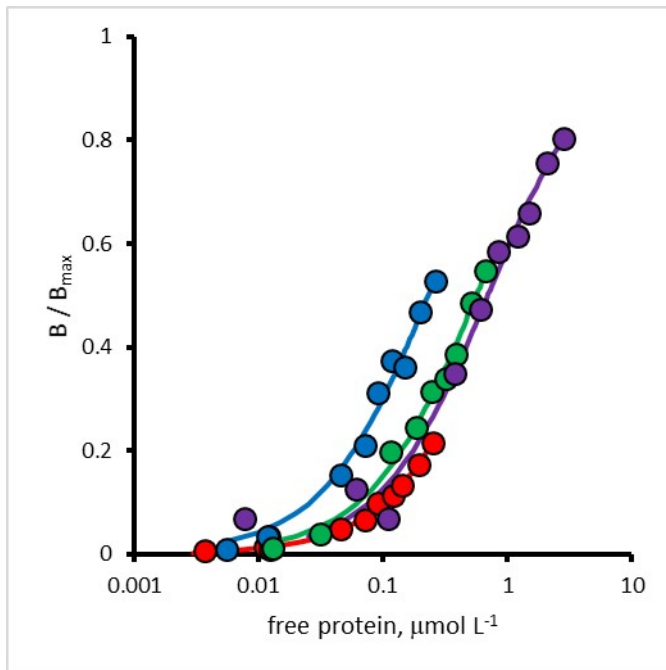
r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value		
0.9918343034	0.9895012473	0.0436751247	971.70821238		
Parm	Value	Std Error	t-value	95% Confidence Limits	
Bmax	4.404778545	0.921321305	4.780936379	2.280207808	6.529349282
Keq	1.601423805	0.438119205	3.655223940	0.591119109	2.611728501
					P> t
					0.00139
					0.00645

nanoNIP_EDMA_BSA

r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value		
0.9899628799	0.9870951313	0.0926908552	789.04137540		
Parm	Value	Std Error	t-value	95% Confidence Limits	
Bmax	7.040181259	1.325668508	5.310664935	3.983184202	10.09717832
Keq	0.887839955	0.231876656	3.828932034	0.353131429	1.422548482
					P> t
					0.00072
					0.00503

nanoNIP_EDMA_LZM

r^2 Coef Det	DF Adj r^2	Fit Std Err	F-value		
0.9973423552	0.9964564736	0.4505003329	2626.9110198		
Parm	Value	Std Error	t-value	95% Confidence Limits	
Bmax	162.9357339	42.77348563	3.809269493	61.79251263	264.0789552
Keq	0.075122284	0.022401775	3.353407660	0.022150503	0.128094064
					P> t
					0.00663
					0.01219



nanoNIP_GDMA_RIgG

r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value		
0.9971194316			0.9962964121	0.0419799636	2769.2296666		
Parm	Value		Std Error	t-value	95% Confidence Limits		P> t
Bmax	10.29288198		2.060024945	4.996484148	5.542455946	15.04330802	0.00106
Keq	1.095123381		0.261738625	4.184034287	0.491553030	1.698693732	0.00306

nanoNIP_GDMA_BlgG

r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value		
0.9897824381			0.9868631347	0.0412233005	774.96565061		
Parm	Value		Std Error	t-value	95% Confidence Limits		P> t
Bmax	3.389852076		0.711088070	4.767133943	1.750080047	5.029624104	0.00141
Keq	1.779035815		0.503076050	3.536315862	0.618940365	2.939131264	0.00766

nanoNIP_GDMA_BSA

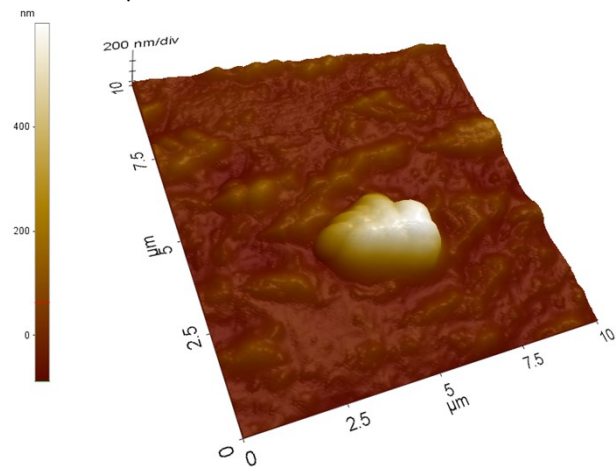
r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value		
0.9936525051			0.9918389352	0.0722714346	1252.3397328		
Parm	Value		Std Error	t-value	95% Confidence Limits		P> t
Bmax	9.937853368		2.209129290	4.498538594	4.843592097	15.03211464	0.00201
Keq	0.556319023		0.154933782	3.590688972	0.199041081	0.913596965	0.00708

nanoNIP_GDMA_LZM

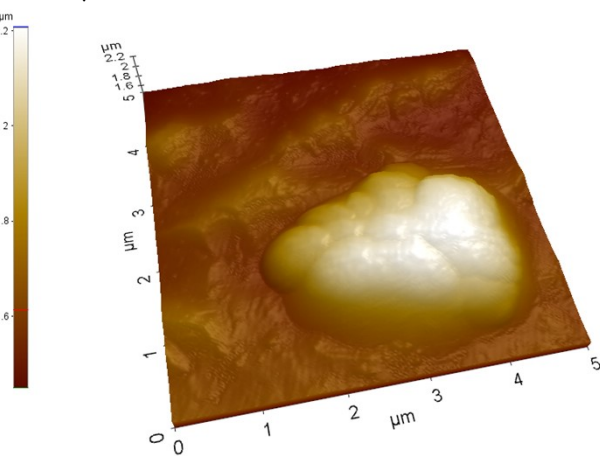
r^2	Coef Det	DF	Adj r^2	Fit Std Err	F-value		
0.9976828314			0.9970207832	0.3358295725	3444.4893313		
Parm	Value		Std Error	t-value	95% Confidence Limits		P> t
Bmax	31.63808539		1.292211017	24.48368338	28.65824145	34.61792934	0.00000
Keq	0.568918263		0.043635104	13.03808641	0.468295532	0.669540994	0.00000

3 – Atomic force imaging of nanoMIPs grafted onto glass surfaces at high ionic strength (0.1 mol L⁻¹ NaCl).

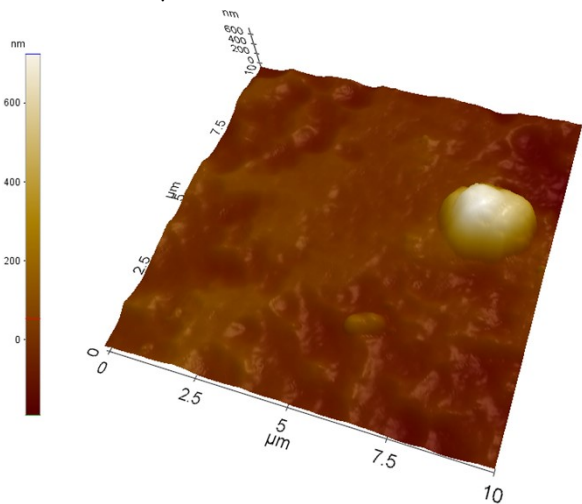
BIS 10 x 10 μm



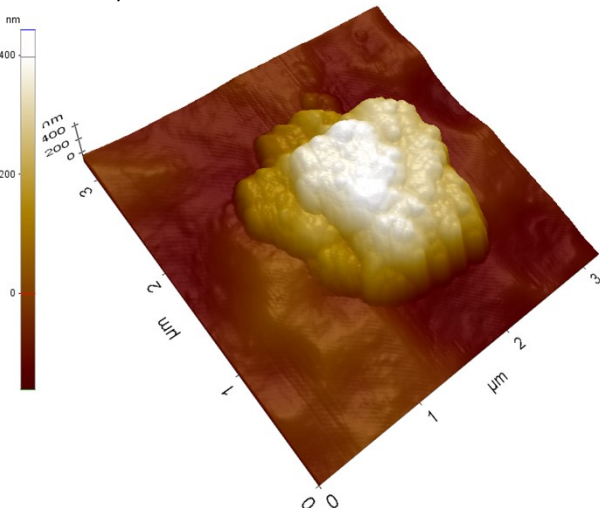
BIS 5 x 5 μm



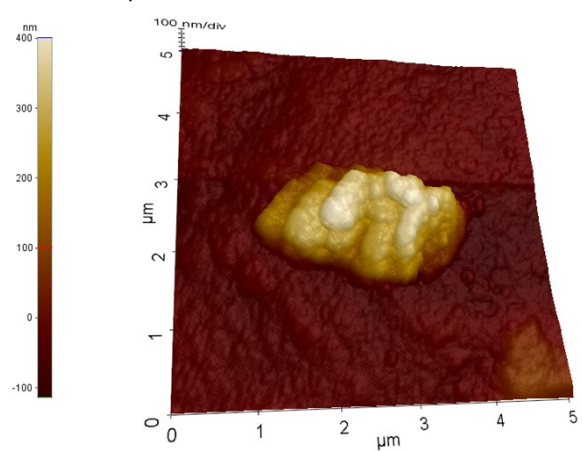
EDAM 10 x 10 μm



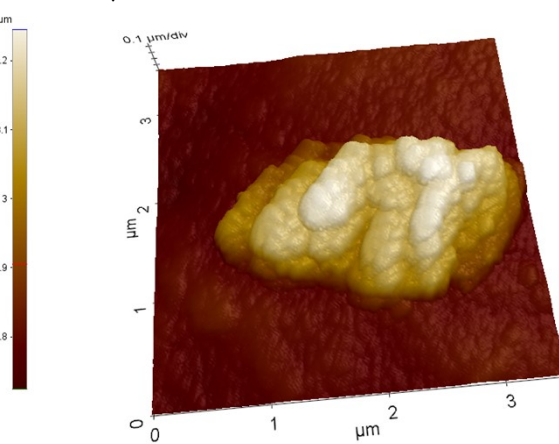
EDAM 3 x 3 μm



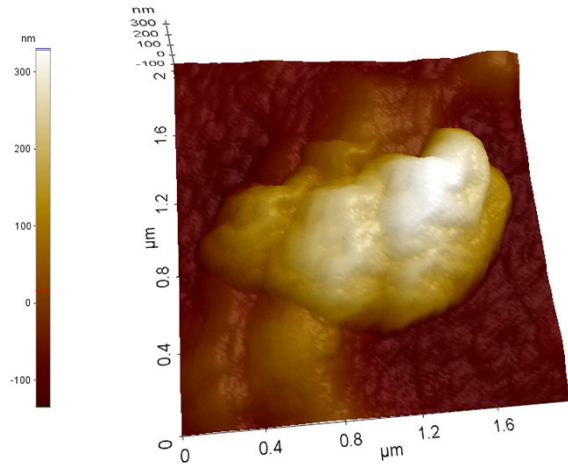
NOBE 5 x 5 μm



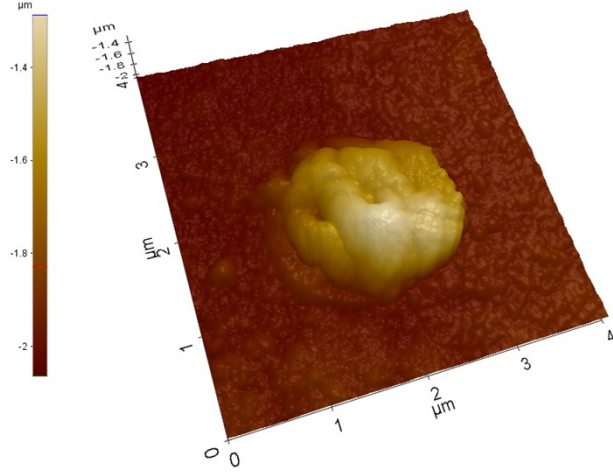
NOBE 3 x 3 μm



EDMA 1.8 x 1.8 μm



GDMA 5 x 5 μm



GDMA 3 x 3 μm

