Study of Short Peptide Adsorption on Solution Dispersed Inorganic Nanoparticles Using Depletion Method

Elena Korina[a], Sergei Naifert[a], Roman Morozov[a],
Vladimir Potemkin[a,b], Oleg Bol'shakov[a]*

[a] Nanotechnology Education and Research Center, South Ural State University, 454080 Chelyabinsk, Russia

[b] Laboratory of Computational Modelling of Drugs, South Ural State University, 454080 Chelyabinsk, Russia

Preparation of 16 mM Dipeptide Stock Solution

Preparation of Peptide Dilutions

Preparation of Titania Sole

Mixing and Thermostating

Filtration of the Thermostated Samples

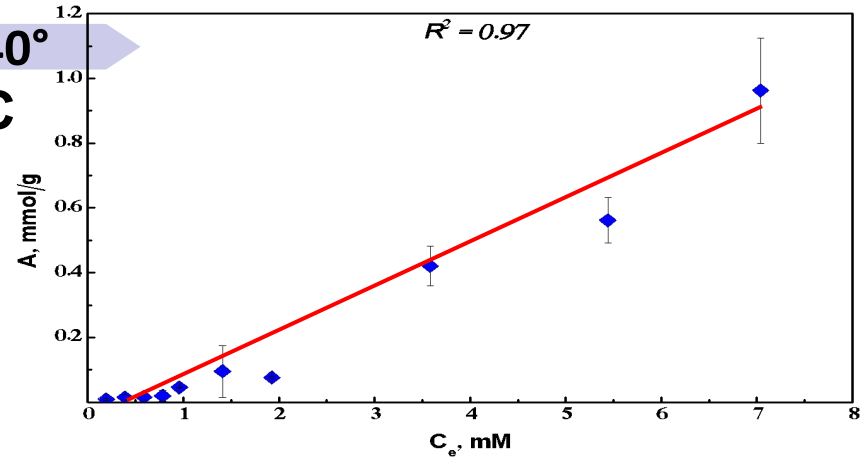# Preparation of Derivatization Solutions

Derivatization

HPLC Analysis

Representative results
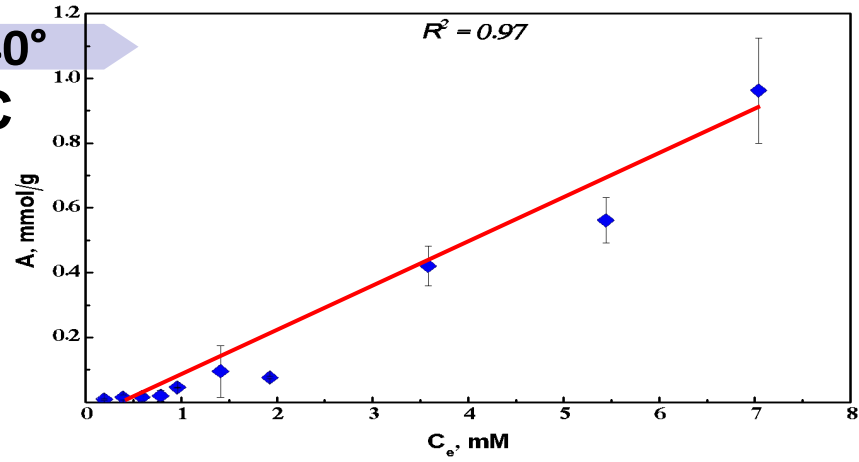
$$A = K_H C_e$$
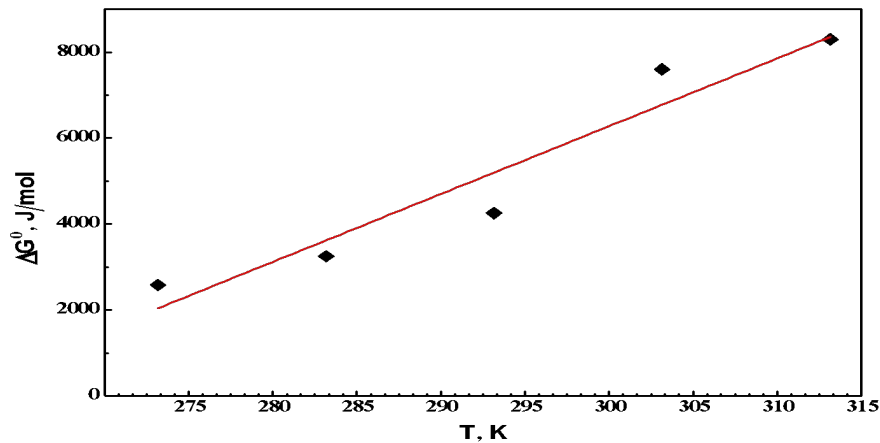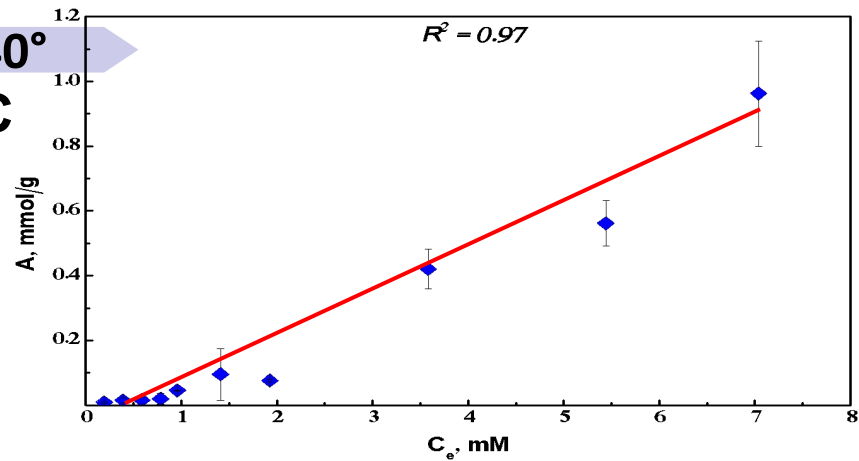
$$K_H = \frac{dA}{dC_e}$$

$$A = K_H C_e$$

$$K_H = \frac{dA}{dC_e}$$

$$\Delta G = -RT \ln K$$

40°

C

$$A = K_H C_e$$

$$K_H = \frac{dA}{dC_e}$$

$$\Delta G = -RT \ln K$$

$$\Delta G = \Delta H - T\Delta S$$

$$\Delta G = -41000 + 160\,T$$

Physico-chemical Constants of Ile-His Adsorption on TiO$_2$

Table 1

T, K	K$_H$	ΔG^0, kJ/mol	ΔH^0, kJ/mol	ΔS^0, kJ/mol K
273.15	0.32	2.6		
283.15	0.25	3.2		
293.15	0.17	4.3	-41	-0.16
303.15	0.05	7.6		
313.15	0.04	8.3		

Conclusions

Executive producer	Sergei Gordienko
Producer	Dmitry Shytyakov
Scriptwriter	Oleg Bol'shakov
Videographer	Pavel Shytyakov
Editors	Roman Morozov
	Elena Korina