

# Insight into Environmental Effects on Bonding and Redox Properties of [4Fe-4S] Clusters in Proteins

Shuqiang Niu and Toshiko Ichiye\*

*Department of Chemistry, Georgetown University, Washington, DC 20057-1227*

\*To whom correspondence may be addressed. E-mail: ti9@georgetown.edu

The full citation for ref. 10.

- (10) Straatsma, T. P.; Aprà, E.; Windus, T. L.; Bylaska, E. J.; de Jong, W.; Hirata, S.; Valiev, M.; Hackler, M.; Pollack, L.; Harrison, R.; Dupuis, M.; Smith, D. M. A.; Nieplocha, J.; V., T.; Krishnan, M.; Auer, A. A.; Brown, E.; Cisneros, G.; Fann, G.; Früchtl, H.; Garza, J.; Hirao, K.; Kendall, R.; Nichols, J.; Tsemekhman, K.; Wolinski, K.; Anchell, J.; Bernholdt, D.; Borowski, P.; Clark, T.; Clerc, D.; Dachsel, H.; Deegan, M.; Dyall, K.; Elwood, D.; Glendening, E.; Gutowski, M.; Hess, A.; Jaffe, J.; Johnson, B.; Ju, J.; Kobayashi, R.; Kutteh, R.; Lin, Z.; Littlefield, R.; Long, X.; Meng, B.; Nakajima, T.; Niu, S.-Q.; Rosing, M.; Sandrone, G.; Stave, M.; Taylor, H.; Thomas, G.; van Lenthe, J.; Wong, A.; Zhang, Z. NWChem, A Computational Chemistry Package for Parallel Computers, Version 4.6; Pacific Northwest National Laboratory, Richland, Washington 99352-0999, USA, 2004.

Figure S1. The calculated hydrogen bonding of terminal and bridging ligands of  $[\text{Fe}_4\text{S}_4(\text{SEt})_4]^{2-}$ ,  $[\text{Fe}_4\text{S}_4(\text{SEt})_4]^{2-}\text{-HB(t)}$  and  $[\text{Fe}_4\text{S}_4(\text{SEt})_4]^{2-}\text{-HB(b)}$ .

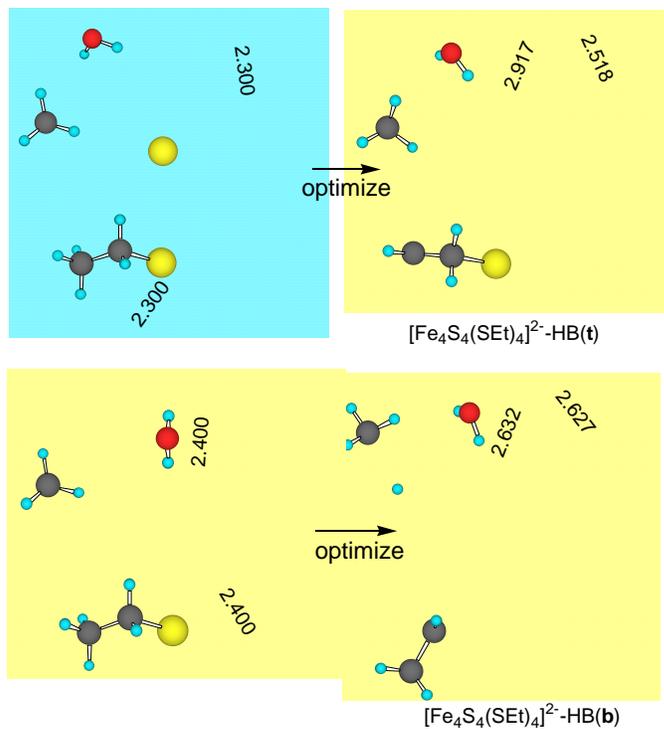


Table S1. The Conformational Parameters of the Ligands of the  $[\text{Fe}_4\text{S}_4(\text{SEt})_4]^{2-}$  Analogs and Protein redox sites.

	Fe <sub>1</sub> -Fe <sub>2</sub> top-layer				Fe <sub>3</sub> -Fe <sub>4</sub> bottom-layer			
	Ligand1		Ligand2		Ligand3		Ligand4	
	$\chi_2$	$\chi_3$	$\chi_2$	$\chi_3$	$\chi_2$	$\chi_3$	$\chi_2$	$\chi_3$
$[\text{Fe}_4\text{S}_4(\text{SEt})_4]^{2-}$	87.9	50.5	87.9	49.4	87.9	49.4	87.9	50.5
SL	173.8	87.5	177.5	61.5	180.0	59.4	172.0	81.3
HB(t)	66.4	50.2	66.4	50.2	66.4	50.2	66.4	50.2
HB(b)	141.6	63.0	141.6	63.0	141.6	63.0	141.6	63.0
Fd-like	88.6	83.8	-87.6	73.9	80.5	-76.0	-87.8	66.3
HiPIP-like	81.5	-65.5	-86.4	67.7	-81.0	-153.2	-178.4	-171.9
<i>Bt</i> Fd	83.2	100.3	-68.8	66.9	64.4	-64.2	-108.8	24.0
<i>Tt</i> HiPIP	123.7	-55.9	-76.3	64.8	-66.5	-148.4	-170.8	174.2