



**Curriculum vitae
Europass**



Informații personale

Nume / Prenume **Silaghi-Dumitrescu, Radu**
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Naționalitate(-tăți) romana

Data nașterii 1974

Sex m

Experiența profesională

Perioada **1. 2011-prezent**
2. 2007-prezent
3. 2000- 2007
4. 1998-2000
5. 2000-2004
6. 2004-2006

Funcția sau postul ocupat **1. Co-director al Institutului de Tehnologie al Universitatii Babes-Bolyai**
2. conferentiar
3. asistent universitar
4. preparator
5. graduate student,
6. Senior Research Officer

Activități și responsabilități principale	<ol style="list-style-type: none"> 1. Director responsabil cu componenta de chimie al Institutului de Tehnologie (cercetare, scale-up, producție pilot) 2. cercetare, predare chimie bioanorganică, biochimie (curs, laborator) 3. cercetare, predare chimie biochimie, tehnologii enzimatică (laborator) 4. cercetare, predare chimie organică (laborator)
Numele și adresa angajatorului	<ol style="list-style-type: none"> 1-3. Universitatea "Babes-Bolyai", Cluj-Napoca, România – Facultatea de Chimie și Inginerie Chimică, str Arany Janos 11, Cluj-Napoca, România 4. Department of Chemistry, University of Georgia, Athens, Georgia, USA 5. Department of Biological Sciences, University of Essex, Colchester CO43SQ, UK
Tipul activității sau sectorul de activitate	universitar
Educație și formare	
Perioada	<ol style="list-style-type: none"> 1. 2000-2004 2. 1998-2005 3. iulie 2001 4. 1997-1998 5. 1993-1997
Calificarea / diploma obținută	<ol style="list-style-type: none"> 1. Doctor in Chimie (bio-anorganică) 2. Doctor in Chimie (anorganică) 3. Summer Course in Crystallography 4. M.S. in Chimie 5. B.Sc. in Chimie

Disciplinele principale studiate / competențe profesionale dobândite

Aspecte inter/trans-disciplinare ale științelor naturii. Aceste preocupari sunt ilustrate în parte de masteratul în Chimie Organică (cu o lucrare în domeniul biotransformărilor catalitice), cele doua doctorate in chimie (bio)anorganica, unul axat pe aspecte teoretice si computaționale și altul axat pe experimente la granița cu microbiologia si biofizica. Cele doua doctorate au urmărit ca temă comuna activarea moleculelor mici de către centri metalici cu relevanță biologică. Printre altele am participat direct la eforturile de definire funcțională și structurală a doua noi clase de proteine, ale căror funcții in vivo sunt detoxificarea peroxidizilor (peroxidazele cu fier non-heminic) si respectiv a monoxidului de azot (NO-reductazele cu fier non-heminic); aceste proteine se înscriu într-o nou-definită paradigmă de lupta împotriva stresului oxidativ și împotriva nou-definitului stres nitrozativ (exercitat de monoxidul de azot și alți oxizi sau oxianioni ai azotului) în organismele anaerobe; enzimele studiate de noi au originea în organisme ce prezintă, dincolo de interesul pur științific (“cercetare fundamentală”) relevanță practică de ordin medical (ca de exemplu *Escherichia coli*, *Porphyromonas gingivalis* sau *Camphylobacter jejuni*), economic (ca de exemplu bacteriile acetogene), sau exobiologic (în condițiile în care eventuale forme de viața extraterestră, cel puțin în formele inferioare, vor fi foarte probabil anaerobe). Într-un proiect mai recent desfășurăm eforturi pentru producerea și caracterizarea de substitute de sânge pe bază de metaloproteine. De asemenea, ne preocupă descoperirea de noi enzime și biomateriale cu proprietăți catalitice date de centri metalici. Metodele pe care le-am aplicat direct în aceste proiecte au fost exprimarea si purificarea proteinelor recombinante, cinetica enzimatica (incluzând experimente stopped-flow), cristalografia de raze X, crio-enzimologia, spectroscopiile UV-vis, FTIR, RES, CD, rezonanța Raman, Mössbauer, VT/VH-MCD și ENDOR, cultura microorganismelor în condiții aerobe și anaerobe, tehnici de ADN recombinant (mutageneză, clonare). O direcție paralelă a fost în mod constant modelarea acestor procese prin metode computaționale – la nivel de situsuri active, macromolecule și biomateriale.

Numele și tipul instituției de învățământ / furnizorului de formare	<ol style="list-style-type: none"> 1. University of Georgia, Athens, Georgia , USA Conducator: Prof. Dr. Donald M. Kurtz, Jr. 2. Universitatea “Babes-Bolyai”, Cluj-Napoca, Romania Conducator: Acad. Prof. Dr. Ionel Haiduc 3. American Crystallography Association, University of Georgia, Athens, Georgia, 2001 4. Universitatea “Babes-Bolyai”, Cluj-Napoca, Romania 5. Universitatea “Babes-Bolyai”, Cluj-Napoca, Romania
Nivelul în clasificarea națională sau internațională	Nivel 6 - Învățământ postuniversitar
Aptitudini și competențe personale	<p>Aspecte inter/trans-disciplinare ale științelor naturii. Aceste preocupari sunt ilustrate în parte de masteratul în Chimie Organică (cu o lucrare în domeniul biotransformărilor catalitice), cele doua doctorate in chimie (bio)anorganica, unul axat pe aspecte teoretice si computaționale și altul axat pe experimente la granița cu microbiologia si biofizica. Cele doua doctorate au urmărit ca temă comuna activarea moleculelor mici de către centri metalici cu relevanță biologică. Printre altele, la Athens, am participat direct la eforturile de definire funcțională și structurală a doua noi clase de proteine, ale căror funcții in vivo sunt detoxificarea peroxidilor (peroxidazele cu fier non-hemic) si respectiv a monoxidului de azot (NO-reductazele cu fier non-hemic); aceste proteine se înscriu într-o nou-definită paradigmă de lupta împotriva stresului oxidativ și împotriva nou-definitului stres nitrozativ (exercitat de monoxidul de azot și alți oxizi sau oxianioni ai azotului) în organismele anaerobe; enzimele studiate de noi au originea în organisme ce prezintă, dincolo de interesul pur științific (“cercetare fundamentală”) relevanță practică de ordin medical (ca de exemplu <i>Escherichia coli</i>, <i>Porphyromonas gingivalis</i> sau <i>Camphylobacter jejuni</i>), economic (ca de exemplu bacteriile acetogene), sau exobiologic (în condițiile în care eventuale forme de viața extraterestră, cel puțin în formele inferioare, vor fi foarte probabil anaerobe). Metodele pe care le-am aplicat direct în aceste proiecte au fost exprimarea si purificarea proteinelor recombinante, cinetica enzimatica (incluzând experimente stopped-flow), cristalografia de raze X, crio-enzimologia, spectroscopiile UV-vis, FTIR, RES, CD, rezonanța Raman, Mössbauer, VT/VH-MCD și ENDOR, cultura microorganismelor în condiții aerobe și anaerobe, tehnici de ADN recombinant (mutageneză, clonare).</p>

Limba(i) maternă(e) **romana**

Limba(i) străină(e) cunoscută(e) **Nivelurile din Cadrul Național Comun de Referință pentru Limbi Străine sunt:**

A1 și A2 - Utilizator elementar

B1 și B2 - Utilizator independent

C1 și C2 - Utilizator experimentat

Notă: Se va trece atât codul nivelului (de exemplu B1) cât și descrierea (respectiv Utilizator independent)

Autoevaluare
Nivel european (*)

Limba engleza

Limba franceza

Înțelegere		Vorbire		Sciere
Ascultare	Citire	Participare la conversație	Discurs oral	Exprimar e scrisă
C1	C1	C1	C1	C1
B1	B1	B1	B1	B1

(*) Nivelul Cadrului European Comun de Referință Pentru Limbi Străine

Competențe și aptitudini organizatorice

Supervizat cca >20 lucrari de licenta si de master in Romania, si un proiect similar in Anglia; supervizat activitatea a doi cercetatori postdoctorali din strainatate (stagii a cate o luna). Gestionat contracte de cercetare in calitate de director.

Competențe și aptitudini tehnice

(Rubrică facultativă)

Competențe și abilități sociale

(Rubrică facultativă, vezi instrucțiunile)

Competențe și aptitudini de utilizare a calculatorului

(Rubrică facultativă)

Competențe și aptitudini artistice

(Rubrică facultativă)

Alte competențe și aptitudini

(Rubrică facultativă)

Permis(e) de conducere

Menționați dacă dețineți un permis de conducere și categoria.
(Rubrică facultativă)

Informații suplimentare

(Rubrică facultativă, vezi instrucțiunile)

124. Prejmerean, Cristina , Moldovan, Marioara, Petrea, C.M., Prodan, Doina, Silaghi-Dumitrescu, Laura, Vasile, E., Furtos, Gabriel, Boboia, Stanca, **Silaghi-Dumitrescu, Radu. Physico-chemical and mechanical characterization of some experimental dental nanocomposites.** Materiale Plastice, 2011, 48, 279-284.
123. Imre, Anamaria; Moț, Augustin C; **Silaghi-Dumitrescu, Radu. Exploring the possibility of high-valent copper in models of copper proteins with a three-histidine copper-binding motif.** Central European Journal of Chemistry, 2012, in press.
122. **Silaghi-Dumitrescu, Radu. Redox activation of small molecules at biological metal centers.** Structure & Bonding, 2012, accepted.
121. Salnikov, Denis S.; Dereven'kov, Ilya A.; Makarov, Sergei V.; Ageeva, Elena S.; Lupan, Alexandru; Surducun, Mihai; **Silaghi-Dumitrescu, Radu. Kinetics Of Reduction Of Cobalamin By Sulfoxylate In Aqueous Solutions.** Revue Roumaine de Chimie, 2012, accepted.
120. Moț, Augustin C.; Pârvu, Marcel; Damian, Grigore; Darula, Irimie, Florin D.; Zsuzsanna; Medzihradzky, Katalin F.; Brem, Balazs; **Silaghi-Dumitrescu, Radu. A “yellow” laccase with “blue” spectroscopic features, from Sclerotinia sclerotiorum.** Process Biochemistry, 2012, 47(6), 968–975.
119. **Silaghi-Dumitrescu, Radu. DFT vibrational analysis of metal-hydroperoxo bleomycin complexes.** Studia Universitatis Babes-Bolyai, Chemia 2012, in press
118. Cioloboc, Daniela; Tomsa, Adrian-Raul; Damian, Grigore; **Silaghi-Dumitrescu, Radu. High spin to low spin change induced by reductive chemistry with iron-substituted Dawson polyoxometalate.** Inorganic Chemistry Communications 2012, 20(1), 70-72. DOI: 10.1016/j.inoche.2012.02.019
117. Kozma, Ágnes; Ibáñez, Susana; **Silaghi-Dumitrescu, Radu**; Sanz Miguel, Pablo J.; Gupta, Deepali; Lippert, Bernhard. **7-Methylguanine: protonation, formation of linkage isomers with trans-(NH₃)₂Pt^{II}, and base pairing properties.** Dalton Transactions, 2012, 41 (20), 6094 – 6103. (assigned as „hot article” by the journal)
116. Lupan, Alexandru; Matyas, Csongor; Mot, Augustin; **Silaghi-Dumitrescu, Radu. Can geometrical distortions make a laccase change color from blue to yellow?.** Studia Universitatis Babes-Bolyai, Chemia 2011, 56(3), 201-206.

115. Prodan, Doina; Silaghi-Dumitrescu, Laura; Prejmerean, Cristina; **Silaghi-Dumitrescu, Radu**; Bolojan, Laura; Damian, Grigore. **Evaluation of free radical concentration in some new dental composite materials by ESR spectroscopy.** Studia Universitatis Babes-Bolyai, Chemia 2011, 56(3), 231-238.
114. Mot, Augustin C.; Syrbu, Sergei A.; Makarov, Sergei V.; Damian, Grigore; **Silaghi-Dumitrescu, Radu.** **Axial ligation in water-soluble copper porphyrinates: contrasts between EPR and UV-vis.** Inorganic Chemistry Communications 2012, 18(4), 1-3.
113. Iacob, Bianca; Deac, Florina; Cioloboc, Daniela; Damian, Grigore; **Silaghi-Dumitrescu, Radu.** **Hemoglobin-albumin Crosslinked Copolymers: Reduced Prooxidant Reactivity.** Artificial Cells Blood Substitutes And Biotechnology 2011, 39(5), 293-297.
112. **Silaghi-Dumitrescu, Radu**; Mich, Mihaela; Matyas, Csongor; Cooper, Chris E. **Nitrite and nitrate reduction by molybdenum centers of the nitrate reductase type: Computational predictions on the catalytic mechanism.** Nitric Oxide 2012, 26(1):27-31
111. **Silaghi-Dumitrescu, Radu**; Ghinga, Radu. **A computational investigation of the decay mechanism of the reaction product of anthranilate dioxygenase (anthranilic acid diol).** Studia Universitatis Babes-Bolyai, Chemia 2011, in press.
110. Bischin, Cristina; Taciuc, Vicentiu; **Silaghi-Dumitrescu, Radu.** **Cisplatin effect on hemoglobin and myoglobin autooxidation.** Studia Universitatis Babes-Bolyai, Chemia 2010, 55(4), 313-318.
109. Irsai, Izabella ; Majdik, Cornelia; Lupan, Alexandru; **Silaghi-Dumitrescu, Radu.** **Secondary structure elements in polylactic acid models,** J. Math Chem, 2011, 50(4), 703-733.
108. Salnikov, Denis S.; **Silaghi-Dumitrescu, Radu**; Makarov, Sergei V.; van Eldik R, Boss GR **Cobalamin reduction by dithionite. Evidence for the formation of a six-coordinate cobalamin(II) complex.** Dalton Trans. 2011 40(38), 9831-4
107. Prejmerean, Cristina; Moldovan, Marioara; Silaghi-Dumitrescu, Laura; Prodan, Doina; Furtos, Gabriel; Trif, Marcela; Popescu, Violeta; Pascalau, Violeta; Petrea, Celina-Maria; **Silaghi-Dumitrescu, Radu.** **Composition Versus Physico-mechanical Properties of Some Dental Experimental Polymers.** Materiale Plastice, 2011, 48(1), 27-32.
106. **Silaghi-Dumitrescu, Radu**; Makarov, Sergei V.; Uta, Matei-Maria

Dereven'kov, Iliia A.; Stuzhin Pavel A. **Redox non-innocence of a nitrido bridge in a methane-activating dimer of iron phthalocyanine**, New Journal of Chemistry, 2011, 35(5), 1140-1145.

105. **Silaghi-Dumitrescu, Radu. What causes iron-sulphur bonds in active sites of one-iron superoxide reductase and two-iron superoxide reductase to differ?**. Chemical Papers, 2011, 65 (4), 559–565.

104. Bischin, Cristina; Lupan, Alexandru; Taciuc, Vicentiu; **Silaghi-Dumitrescu, Radu. Interactions between proteins and platinum-containing anti-cancer drugs**. Mini-Reviews in Medicinal Chemistry, 2011, 11, 214-224.

103. Fischer-Fodor, Eva; Mot, Augustin; Deac, Florina; Arkosi, Mariann; **Silaghi-Dumitrescu, Radu. Towards hemerythrin-based blood substitutes: comparative performance to hemoglobin on human leukocytes and umbilical vein endothelial cells**. Journal of Biosciences, 2011, 36(2), 215-221.

102. **Silaghi-Dumitrescu, Radu; Makarov, Sergei. Siroheme-containing sulfite reductase: a density functional investigation of the mechanism**, International Journal of Quantum Chemistry 2012, 112(3), 900-908.

101. **Silaghi-Dumitrescu, Radu. Assays for peroxidase activity: the HRP case**, Studia Universitatis Babes-Bolyai, Chemia 2010, 55(3), 207-222.

100. Kun, Attila; Lupan, Alexandru; **Silaghi-Dumitrescu, Radu. PM6 modeling of alpha helical polypeptide structures**, Studia Universitatis Babes-Bolyai, Chemia 2010, 55(1), 31-36.

99. Zolog, Oana; Mot, Augustin; Deac, Florina; Roman, Alina; Fischer-Fodor, Eva; **Silaghi-Dumitrescu, Radu. A new polyethyleneglycol-derivatized hemoglobin derivative with decreased oxygen affinity and limited toxicity** The Protein Journal, 2010, 30(1), 27–31.

98. Deac, Florina-Violeta; Bolfa, Ana Maria; Magdas, Cristian; Sevastre, Bogdan; Turc, Silvia; **Silaghi-Dumitrescu, Radu. Hemoglobin-based blood substitutes: which hemoglobin to use?**, Romanian Journal of Biochemistry, 2010, 47(2), 135–141.

97. Mot, Augustin; **Silaghi-Dumitrescu, Radu; Sarbu, Costel. Rapid and effective evaluation of antioxidant capacity of propolis extracts using DPPH bleaching kinetic profiles, FT-IR and UV-vis spectral data** Journal of Food Composition and Analysis, 2011, 516–522.

96. Deac, Florina; Cotolan, Nicoleta; Kis, Zoltan; **Silaghi-Dumitrescu, Radu. A dithionite-induced six-coordinated species at the heme in deoxy-hemoglobin**, Metal Elements in Environment, Medicine and Biology Tome X,

Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2010, Eurobit Publishing House, Timisoara, Romania, pp 121-126.

95. Lupan, Alexandru; Kun, Attila; **Silaghi-Dumitrescu, Radu. Computational modeling metal-protein interactions: cisplatin**, Metal Elements in Environment, Medicine and Biology Tome X, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2010, Eurobit Publishing House, Timisoara, Romania, pp 199-204.

94. Bischin, Cristina; Taciuc, Vicentiu; **Silaghi-Dumitrescu, Radu. Effects of antioxidants in cisplatin toxicology**, Metal Elements in Environment, Medicine and Biology Tome X, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2010, Eurobit Publishing House, Timisoara, Romania, pp 265-270.

93. **Silaghi-Dumitrescu, Radu; Seff, Amalia-Laura. Superoxide reductase: a debated mechanism, comparison with superoxide dismutases**, Metal Elements in Environment, Medicine and Biology Tome X, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2010, Eurobit Publishing House, Timisoara, Romania, pp 21-26.

92. Bischin, Cristina; Deac, Florina; Deac, Florina; **Silaghi-Dumitrescu, Radu; Worrall, Jonathan A. R.; Rajagopal, Badri S.; Damian, Grigore; Cooper, Chris E. Ascorbate peroxidase activity of cytochrome c** Free Radical Research, 2010, 45(4), 439-444.

91. Deac, Florina; Iacob, Bianca; Fischer-Fodor, Eva; Damian, Grigore; **Silaghi-Dumitrescu, Radu. Derivatization of hemoglobin with periodate-generated reticulation agents: evaluation of oxidative reactivity for potential blood substitutes** Journal of Biochemistry, 2010, 149(1), 75-82 .

90. Mot, Augustin C.; Roman, Alina; Lupan, Iulia; Kurtz, Jr. Donald M.; **Silaghi-Dumitrescu, Radu. Towards the development of hemerythrin-based blood substitutes** The Protein Journal, 2010, 29(6), 387-393.

89. **Silaghi-Dumitrescu, Radu. High-valent metalloporphyrins in hydrocarbon activation: metal(V)-oxo or metal(V)-hydroxo?** New Journal of Chemistry, 2010, 34(9), 1830-1833 .

88. **Silaghi-Dumitrescu, Radu, Uta, Matei-Maria; Makarov, Sergei V. Nitrite linkage isomerism in hemes and related complexes: modulation by metal, oxidation state, macrocycle, and medium polarity** Revue Roumaine de Chimie, 2010, 55(11-12), 897-903.

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85. **Tomşa, Adrian-Raul; Cioloboc, Daniela; Todea, Ana Maria; Silaghi-Dumitrescu, Radu; Damian, Grigore; Rusu, Mariana. Synthesis, spectroscopic and electrochemical characterization of a new chromium (III) substituted Dawson polyoxometalate** Studia Universitatis Babes-Bolyai, Chemia 2009, 54 (4), 95-105.
84. **Silaghi-Dumitrescu, Radu. A density functional investigation of hydrogen peroxide activation by high-valent heme centers: implications for the catalase catalytic cycle** Journal of Porphyrins and Phthalocyanines, 2010, 14(5), 371-374.
83. **Silaghi-Dumitrescu, Radu. Computational description of peptide architectures based on hydrogen bonds** Studia Universitatis Babes-Bolyai, Chemia 2010, LV(1), 31-36.
82. **Kis, Zoltan; Makarov, Sergei V; Silaghi-Dumitrescu, Radu. Computational investigations on the electronic structure and reactivity of thiourea dioxide: sulfoxylate formation, tautomerism, dioxygen liberation**, Journal of Sulphur Chemistry, 2010, 31(1), 27-39.
81. **Silaghi-Dumitrescu, Radu; Makarov, Sergei V. Hydrocarbon oxygenation by metal-nitrite adducts: a theoretical comparison with ferryl-based oxygenation agents**, European Journal of Inorganic Chemistry, 2010, 39(6):1464-6.
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79. **Deac, Florina-Violeta; Todea, Anamaria; Bolfa, Ana Maria; Podea, Paula; Petrar, Petronela; Silaghi-Dumitrescu, Radu. Ascorbate binding to globins**, Romanian Journal of Biochemistry, 2009, 46(2), 115–121.
78. **Mot, Augustin Catalin; Damian, Grigore; Sarbu, Costel; Silaghi-Dumitrescu, Radu. Redox reactivity in propolis: direct detection of free radicals in basic medium and interaction with hemoglobin**, Redox Report, 2009, 14(6), 267-74.
77. **Arkosi, Mariann-Kinga; Deac, Florina; Silaghi-Dumitrescu, Radu. Hemoglobin peroxidase activity: interaction with hydroquinone and anthracene**, Metal Elements in Environment, Medicine and Biology Tome IX, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2009, Cluj University Press, Cluj-Napoca, Romania, pp 99-110.

76. Mot, Augustin; Roman, Alina; **Silaghi-Dumitrescu, Radu. Blood substitutes: can we do without hemoglobin?**, Metal Elements in Environment, Medicine and Biology Tome IX, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2009, Cluj University Press, Cluj-Napoca, Romania, pp 122-125.

75. Taciuc, Vicentiu; Bischin, Cristina; **Silaghi-Dumitrescu, Radu. A novel mechanism for platinum-based drugs: cisplatin and related compounds as pro-oxidants in blood**, Metal Elements in Environment, Medicine and Biology Tome IX, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2009, Cluj University Press, Cluj-Napoca, Romania, pp 130-134.

74. Deac, Florina; Todea, Anamaria; **Silaghi-Dumitrescu, Radu. Glutaraldehyde derivatization of hemoglobin: a potential blood substitute**, Metal Elements in Environment, Medicine and Biology Tome IX, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2009, Cluj University Press, Cluj-Napoca, Romania, pp 165-173.

73. **Silaghi-Dumitrescu, Radu**; Bischin, Cristina; Deac, Florina; Kis, Zoltan; Mot, Augustin; Makarov, Sergei V. **Unusual metal oxidation states in metalloproteins and related complexes: from degenerate orbitals to apoptosis**, Metal Elements in Environment, Medicine and Biology Tome IX, Radu Silaghi-Dumitrescu, Gabriela Garban, Eds., 2009, Cluj University Press, Cluj-Napoca, Romania, pp 174-182.

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Dumitrescu, Radu. Cobalt tetrasulfophthalocyaninate – a catalyst for nitrite reduction by thiourea dioxide, Russian Journal of Physical Chemistry 2009, 83(12), 2250-2254.

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64. **Silaghi-Dumitrescu, Radu. Carbon dioxide activation: hydration by carbonic anhydrase and related systems - what makes a good catalyst?** Journal of Molecular Structure THEOCHEM 2010, 942(1-3), 15-18.

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62. **Silaghi-Dumitrescu, Radu. Bonding in biologically-relevant high-valent iron centers** International Journal of Chemical Modeling 2008, 1 (4).

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