

## **Galen Dean Stucky**

### **Professor of Chemistry and Materials**

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### **Education**

McPherson College

B.S.

1957 (Chemistry and Physics)

Iowa State University

Ph.D.

1962 (Physical Chemistry, with R. E. Rundle)

“Molecular configurations of some of the solvated compounds of the Grignard system”

### **Professional Experience**

- 1962-63 Postdoctoral Fellow, Massachusetts Institute of Technology, Physics (C. G. Shull)
- 1963 NSF Postdoctoral Fellow, Quantum Chemistry Institute, Physical Chemistry
- 1964-68 Assistant Professor, University of Illinois, Chemistry
- 1968-72 Associate Professor, University of Illinois, Chemistry
- 1972-81 Professor, University of Illinois, Chemistry
- 1979-80 Member of Technical Staff, Sandia National Laboratory
- 1980-81 Supervisor, Sandia National Laboratory, Solid State Materials
- 1981-85 Group and Research Leader, DuPont Central Research and Development
- 1985-- Professor, University of California, Santa Barbara
- 2006-2016 E. Khashoggi Industries, LLC Professor in Letters and Science, University of California, Santa Barbara
- 2016-- Khashoggi Chair in Materials Chemistry, University of California, Santa Barbara

### **Selected Honors**

Fellow, American Association for the Advancement of Science (1994); Alexander von Humboldt Senior US Scientist award (2000); American Chemical Society Award in the Chemistry of Materials (2002); International Mesosstructured Materials Association Award (2004); Fellow, American Academy of Arts and Sciences (2005); Advanced Technology Applications for Combat Casualty Care (ATACCC) Award (2008); Nano Today Award (2011); Fellow, American Chemical Society (2013); election to National Academy of Sciences (2013); Prince of Asturias Award, with A. Corma and M. E. Davis (2014); Fellow, National Academy of Inventors (2015)

Lectureships. First Annual Margaret Etter Memorial Lecturer, University of Minnesota (1993);

Distinguished Lecturer, York University (1994); Watt Centennial Lecturer, University of Texas at Austin (1999); one of three lecturers at the Symposium in Honor of the 100th Anniversary of the Foundation of the Chemical Institutes at “Hessische Strasse” (2000); Herbert H. Johnson Memorial Lecturer, Cornell University (2000); Raymond Siedle Lecturer, Indiana University (2001); Coover Lecturer, Iowa State University (2002); Gomberg Lecturer, University of Michigan (2003); Distinguished Lecturer in Inorganic Chemistry, Northwestern University (2003); Dow/Karabatsos Lecturer, Michigan State University (2004); Nanqiang Lecturer, Xiamen University (2008); Barrer Lecturer, The Pennsylvania State University (2011); Edith Flanigen Lecturer, UOP (2015)

Special Appointments. Visiting Professor Fellow, University of Uppsala, Uppsala, Sweden (1970); United Nations Industrial Development Organization Fellow to National Chemical Laboratory, Pune, India (1990); Exchange Professor with Academy of Science, Moscow, and University of Leningrad (1990); Visiting Professor Fellow, University of Konstanz (1992,1993); Honorary Professor, Fudan

University, Shanghai, China (2000--); Inorganic Foundation Visiting Professor, University of Sydney (2001); Guest Professor, Peking University (2006-2008)

**Scientific Advisory Boards.** Biosym, Inc. (1991-97), High Throughput Experimentation GmbH (1998-), SBA Materials, Inc. (2001-2004), GRT Inc. (2002-2012), Institute of Bioengineering and Nanotechnology, Singapore (2004--), SiGNa Chemistry (2008--), State Key Laboratory of Physical Chemistry of Solid Surfaces, Xiamen (2009--), International Center for Materials Nanoarchitectonics, Japan (2009-2012), The Molecular Foundry at Lawrence Berkeley National Laboratory (2006-2013), Joint Center for Artificial Photosynthesis (2012--)

**Group members.** Since 1968, over 75 students have been awarded masters or doctoral degrees under Galen Stucky's supervision or co-supervision; they subsequently chose a variety of career paths. He has also supervised numerous postdoctoral research associates on short-term or long-term projects and has had the pleasure of collaborating with scientific colleagues around the world. A partial list of former group members is maintained at [labs.chem.ucsb.edu/stucky/galen/stuckygroup/Past.html](http://labs.chem.ucsb.edu/stucky/galen/stuckygroup/Past.html)

**Patents** (list updated at [labs.chem.ucsb.edu/stucky/galen/stuckygroup/patents.html](http://labs.chem.ucsb.edu/stucky/galen/stuckygroup/patents.html))

- “Engineered cementitious hazardous contaminant barriers and their method of manufacture”; Galen Stucky, Hamlin M. Jennings, Simon K. Hodson; U. S. Patent No. 5,169,566 (December 8, 1992)
- “M41S materials having nonlinear optical properties”; Jeffrey S. Beck, Günter H. Köhl, David H. Olson, John L. Schlenker, Galen D. Stucky, James C. Vartuli; U. S. Patent No. 5,348,687 (September 20, 1994)
- “Sensor device containing mesoporous crystalline material”; David H. Olson, Galen D. Stucky, James C. Vartuli; U. S. Patent No. 5,364,797 (November 15, 1994)
- “Method of and apparatus for manufacturing methanol”; Jeffrey H. Sherman, Peter C. Ford, Galen D. Stucky, Philip Grosso; U. S. Patent No. 6,214,176 (April 10, 2001)
- “Modular, energy-dissipating material and method for using it”; Paul K. Hansma, Johannes Kindt, Timothy J. Deming, Daniel E. Morse, Galen D. Stucky; U. S. Patent No. 6,376,636 (April 23, 2002)
- “Process for synthesizing olefin oxides”; Xiao Ping Zhou, Galen D. Stucky, Jeffrey H. Sherman; U. S. Patent No. 6,403,840 (June 11, 2002)
- “Integrated process for synthesizing alcohols and ethers from alkanes”  
Xiao Ping Zhou, Ivan M. Lorkovic, Galen D. Stucky, Peter C. Ford, Jeffrey H. Sherman, Philip Grosso; U. S. Patent No. 6,462,243 (October 8, 2002)  
Xiao Ping Zhou, Galen D. Stucky, Jeffrey H. Sherman; U. S. Patent No. 6,465,696 (October 15, 2002)  
Xiao Ping Zhou, Ivan M. Lorkovic, Galen D. Stucky, Peter C. Ford, Jeffrey H. Sherman, Philip Grosso; U. S. Patent No. 6,472,572 (October 29, 2002)
- “Hierarchically ordered porous oxides”; Peidong Yang, Tao Deng, George M. Whitesides, Galen D. Stucky, Dongyuan Zhao, Bradley F. Chmelka, David Pine, Pingyun Feng; U. S. Patent No. 6,541,539 (April 1, 2003)
- “Block copolymer processing for mesostructured inorganic oxide materials”; Galen D. Stucky, Bradley F. Chmelka, Dongyuan Zhao, Nick Melosh, Qisheng Huo, Jianglin Feng, Peidong Yang, David J. Pine, David I. Margolese, Wayne W. Lukens, Jr., Glenn H. Fredrickson, Patrick Schmidt-Winkel; U. S. Patent No. 6,592,764 (July 15, 2003), U. S. Patent No. 7,176,245 (February 13, 2007), and U. S. Patent 7,763,665 (July 27, 2010)
- “Methods, compositions, and biomimetic catalysts for in vitro synthesis of silica, polysilsequioxane, polysiloxane, and polymetallo-oxanes”; Daniel E. Morse, Galen D. Stucky, Timothy J. Deming, Jennifer Cha, Katsuhiko Shimizu, Yan Zhou; U. S. Patent No. 6,670,438 (December 30, 2003)

- “Integrated process for synthesizing alcohols, ethers, aldehydes, and olefins from alkanes”; Aysen Yilmaz, Gurkan A. Yilmaz, Ivan M. Lorkovic, Galen D. Stucky, Peter C. Ford, Eric W. McFarland, Jeffrey H. Sherman; U. S. Patent No. 6,713,655 (March 30, 2004)
- “Method for forming hierarchically ordered porous oxides”; Peidong Yang, Tao Deng, George M. Whitesides, Galen D. Stucky, Dongyuan Zhao, Bradley F. Chmelka, David Pine, Pingyun Feng; U. S. Patent No. 6,716,378 (April 6, 2004)
- “Self-healing organosiloxane materials containing reversible and energy-dispersive crosslinking domains”; John H. Harreld, Michael S. Wong, Paul K. Hansma, Daniel E. Morse, Galen D. Stucky; U. S. Patent No. 6,783,709 (August 31, 2004)
- “Inorganic/block copolymer-dye composites and dye doped mesoporous materials for optical and sensing applications”; Gernot Wirmsberger, Brian J. Scott, Howard C. Huang, Nicholas A. Melosh, Peidong Yang, Bradley F. Chmelka, Galen D. Stucky; U. S. Patent No. 6,952,436 (October 4, 2005)
- “Method of forming mesoscopically structured material”; Peidong Yang, Tao Deng, George M. Whitesides, Galen D. Stucky, Dongyuan Zhao, Bradley F. Chmelka, David J. Pine, Pingyun Feng; U. S. Patent No. 7,014,799 (March 21, 2006)
- “Hydrophilic polymer-oxide-phosphoric acid compositions for proton conducting membranes”; Wenbin Hong, Galen D. Stucky, Ken Tasaki; U. S. Patent 7,118,821 (October 10, 2006)
- “Method and apparatus for synthesizing olefins, alcohols, ethers, and aldehydes”; Jeffrey H. Sherman, Eric W. McFarland, Michael J. Weiss, Ivan Lorkovic, Leroy Laverman, Shouli Sun, Dieter J. Schaefer, Galen D. Stucky, Peter C. Ford; U. S. Patent 7,161,050 (January 9, 2007)
- “Nanoparticle assembled hollow spheres”; Jennifer Cha, Timothy J. Deming, Galen D. Stucky, Michael S. Wong, Henrik Birkedal, Michael H. Bartl, Jan L. Summerel; U. S. Patent 7,563,457 (July 21, 2009)
- “Hydrogen cyano fullerene containing proton conducting membranes”; Fred Wudl, Galen D. Stucky, Hengbin Wang, Bruno Jusselme, Ken Tasaki, Arunkumar Venkatesan; U. S. Patent 7,588,824 (September 15, 2009)
- “Hydrocarbon conversion process improvements”; Jeffrey H. Sherman, Eric W. McFarland, Michael J. Weiss, Ivan Marc Lorkovic, Leroy E. Laverman, Shouli Sun, Dieter J. Schaefer, Galen D. Stucky, Peter C. Ford, Philip Grosso, Ashley W. Breed, Michael F. Doherty; U. S. Patent 7,838,708 (November 23, 2010) and U. S. Patent 8,415,512 (April 9, 2013)
- “Hydrocarbon synthesis”; Ivan M. Lorkovic, Maria Noy, Jeffrey H. Sherman, Michael J. Weiss, Galen D. Stucky; U. S. Patent 7,847,139 (December 7, 2010)
- “Inorganic materials for hemostatic modulation and therapeutic wound healing”; Galen D. Stucky, Todd A. Ostomel, Qihui Shi, Peter K. Stoimenov, Patricia A. Holden; U. S. Patent 7,858,123 (December 28, 2010)
- “Colloidal sphere templates and sphere-templated porous materials”; John H. Harreld, Galen D. Stucky, Nathan L. Mitchell, Jeff. S. Sakamoto; U. S. Patent 8,137,525 (March 20, 2012)
- “High performance, crosslinked polymeric material for holographic data storage”; Craig J. Hawker, Galen D. Stucky, Alexander Mikhailovsky, Anzar Khan; U. S. Patent 8,187,770 (May 29, 2012)
- “Mesocellular oxide foams as hemostatic compositions and methods of use”; Galen Stucky, Sarah Baker, April Sawvel; U. S. Patent 8,202,549 (June 19, 2012) and U. S. Patent 8,603,543 (December 10, 2013)
- “Hemostatic compositions and methods of use”; Sarah Baker, April Sawvel, Galen D. Stucky; U. S. Patent 8,703,634 (April 22, 2014) and U. S. Patent 9,302,025 (April 5, 2016)
- “Polyphosphate-functionalized inorganic nanoparticles as hemostatic compositions and methods of use”; Damien Kudela, Galen D. Stucky, Anna May-Masnou, Gary B. Braun, James H. Morrissey, Stephanie A. Smith; U. S. Patent 9,186,417 (November 17, 2015)

“High energy capacitors boosted by both catholyte and anolyte”; Galen D. Stucky, Xiulei Ji; U. S. Patent 9,196,425 (November 24, 2015)

“Oxides for wound healing and body repair”; Galen D. Stucky, Todd A. Ostomel, Qihui Shi, April Sawvel, Sarah Baker; U. S. Patent 9,326,995 (May 3, 2016)

**Publications** (list with DOI links at [labs.chem.ucsb.edu/stucky/galen/stuckygroup/publications.html](http://labs.chem.ucsb.edu/stucky/galen/stuckygroup/publications.html))

1. The structure of phenylmagnesium bromide dietherate and the nature of Grignard reagents, G. D. Stucky and R. E. Rundle, *J. Am. Chem. Soc.* 85, 1002-1003 (1963)
2. The crystal and molecular structure of  $Mg_4Br_6O \cdot 4C_4H_{10}O$ , a Grignard reagent oxidation product, G. D. Stucky and R. E. Rundle, *J. Am. Chem. Soc.* 86, 4821-4825 (1964)
3. The constitution of the Grignard reagent, phenylmagnesium bromide dietherate, G. D. Stucky and R. E. Rundle, *J. Am. Chem. Soc.* 86, 4825-4830 (1964)
4. Structural properties of tetramethylammonium tribromonickelate(II), G. D. Stucky, S. D'Agostino and G. L. McPherson, *J. Am. Chem. Soc.* 88, 4828-4831 (1966)
5. The crystal and molecular structure of tetraethylammonium tetrachloronickelate(II), G. D. Stucky, J. B. Folkers, and T. J. Kistenmacher, *Acta Cryst.* 23, 1064-1070 (1967)
6. On the association of the Grignard reagent, J. Toney and G. D. Stucky, *Chem. Commun. (London)*, 1168-1169 (1967)
7. Dative metal-nitrogen  $\pi$ -bonding in bis(dimethylamino)beryllium, J. L. Atwood and G. D. Stucky, *Chem. Commun. (London)*, 1169-1170 (1967)
8. The crystal and molecular structure of  $[Al(CH_3)_3]_2 \cdot C_4H_8O_2$ , J. L. Atwood and G. D. Stucky, *J. Am. Chem. Soc.*, 89, 5362-5366 (1967)
9. The crystal structure of  $(CH_3)_4NNiCl_3$ , G. D. Stucky, *Acta Cryst. B* 24, 330-337 (1968)
10.  $Mg[Al(OCH_3)_2(CH_3)_2]_2 \cdot C_4H_8O_2$ . A novel coordination compound of a metal alkoxide and a donor molecule, J. L. Atwood and G. D. Stucky, *J. Organomet. Chem.* 13, 53-60 (1968)
11. The preparation and crystal structure of  $(CH_3)_5Al_2N(C_6H_5)_2$ ,  $\mu$ -diphenylamino- $\mu$ -methyl-tetramethyldialuminum, V. R. Magnuson, and G. D. Stucky, *J. Am. Chem. Soc.* 90, 3269-3271 (1968)
12. Structural and spectroscopic studies of tetrachlorophosphonium tetrachloroferrate(III),  $[PCl_4][FeCl_4]$ , T. J. Kistenmacher and G. D. Stucky, *Inorg. Chem.* 7, 2150-2155 (1968)
13. Sodium 6-niobo(ethylenediamine)cobaltate(III) and its chromate(III) analog, C. M. Flynn, Jr. and G. D. Stucky, *Inorg. Chem.* 8, 178-180 (1969)
14. Heteropolyniobate complexes of manganese(IV) and nickel(IV), C. M. Flynn, Jr. and G. D. Stucky, *Inorg. Chem.* 8, 332-334 (1969)
15. The crystal structure of sodium-12-niobomanganate(IV),  $Na_{12}MnNb_{12}O_{38} \cdot 50H_2O$ , C. M. Flynn, Jr. and G. D. Stucky, *Inorg. Chem.* 8, 335-344 (1969)
16. Stereochemistry of polynuclear compounds of the main group elements. VII. The structure of octamethyldialuminum-monomagnesium, J. L. Atwood and G. D. Stucky, *J. Am. Chem. Soc.* 91, 2538-2543 (1969)
17. Stereochemistry of polynuclear compounds of the main group elements. VIII. The crystal structure of bis[2-dimethylaminoethyl(methyl)amino]di(methylmagnesium), V. R. Magnuson and G. D. Stucky, *Inorg. Chem.* 8, 1427-1433 (1969)
18. Stereochemistry of polynuclear compounds of the main group elements. IX. Structure of bis(dimethylamino)beryllium and its reaction with trimethylaluminum, J. L. Atwood and G. D. Stucky, *J. Am. Chem. Soc.* 91, 4426-4430 (1969). Correction vol. 92, page 1107 (1970)

19. Stereochemistry of polynuclear compounds of the main group elements. X.  $\mu$ -diphenyl-amino- $\mu$ -methyl-tetramethyldialuminum, V. R. Magnuson and G. D. Stucky, *J. Am. Chem. Soc.* **91**, 2544-2550 (1969)
20. Stereochemistry of polynuclear compounds of the main group elements. XI. Dimethyl-(methylthio)aluminum,  $[(CH_3)_2AlSCH_3]_n$ , a new type of stereochemistry for an organoaluminum compound, D. J. Brauer and G. D. Stucky, *J. Am. Chem. Soc.* **91**, 5462-5466 (1969)
21. The crystal and molecular structure of N-methyl-1,4-diazabicyclo[2.2.2]octonium trichloro-aqua-nickelate(II). A high-spin five-coordinate complex of nickel(II) with monodentate ligands, F. K. Ross and G. D. Stucky, *Inorg. Chem.* **8**, 2734-2740 (1969)
22. Stereochemistry of polynuclear compounds of the main group elements. XII. The preparation and structure of ethyleniminodimethylaluminum trimer, J. L. Atwood and G. D. Stucky, *J. Am. Chem. Soc.* **92**, 285-288 (1970)
23.  $\pi$ -complexation in ion pair bonding. The structure of benzyllithium triethylenediamine, S. P. Patterman, I. L. Karle, and G. D. Stucky, *J. Am. Chem. Soc.* **92**, 1150-1157 (1970)
24. The structural properties of dimethylbis(quinuclidine)magnesium, J. Toney and G. D. Stucky, *J. Organomet. Chem.* **22**, 241-249 (1970)
25.  $\pi$ -complexation in ion pair bonding. Tetra(1,4-epoxybutane)disodium(I) tetramethylbis-1,4-dihydro-1,4-naphthylenedialuminate,  $[Na(C_4H_8O)_2]_2[Al(CH_3)_2C_{10}H_8]_2$ , a novel organoaluminate structure, D. J. Brauer and G. D. Stucky, *J. Am. Chem. Soc.* **92**, 3956-3963 (1970)
26. New evidence supporting the formation of diaziridinium cation in the hydrolytic fission of diaziridines, J. S. Swanson and G. D. Stucky, *J. Heterocyclic Chem.* **7**, 667-669 (1970).
27. Geometry and stabilization of the  $Ni_2Cl_8^{4-}$  anion in  $[HN(C_2H_4)_3NCH_3NiCl_4]_2$ , F. K. Ross and G. D. Stucky, *J. Am. Chem. Soc.* **92**, 4538-4544 (1970)
28. Single crystal paramagnetic resonance studies of V(II), Mn(II), and Ni(II) in  $CsMgCl_3$  and the crystal structure of  $CsMgCl_3$ , G. L. McPherson, T. J. Kistenmacher, and G. D. Stucky, *J. Chem. Phys.* **52**, 815-824 (1970). Correction vol. 54, page 1432 (1971)
29. Linear antiferromagnetism in spin-1 systems;  $CsNiCl_3$ , J. Smith, B. C. Gerstein, S. H. Liu, and G. D. Stucky, *J. Chem. Phys.* **53**, 418-422 (1970)
30. The structure of N-methyl-5,5-dimethyloxazolidine-2,4-dione, T. J. Kistenmacher and G. D. Stucky, *Acta Cryst. B* **26**, 1445-1450 (1970)
31. A structural study of two products of the reaction of phosphorus pentachloride with titanium tetrachloride. The crystal and molecular structures of bis(tetrachlorophosphonium) di- $\mu$ -chlorooctachlorodititanate(IV),  $[PCl_4]_2[Ti_2Cl_{10}]$ , and tetrachlorophosphonium tri- $\mu$ -chlorohexachlorodititanate(IV),  $[PCl_4][Ti_2Cl_9]$ , T. J. Kistenmacher and G. D. Stucky, *Inorg. Chem.* **10**, 122-132 (1971)
32. The stereochemistry of polynuclear compounds of the main group elements.  $[C_2H_5Mg_2Cl_3(C_4H_8O)_3]_2$ , a tetrameric Grignard reagent, J. Toney and G. D. Stucky, *J. Organomet. Chem.* **28**, 5-20 (1971)
33. The crystal and molecular structure of 4-methylpyridinium triphenylphosphine tribromozincate, R. E. DeSimone and G. D. Stucky, *Inorg. Chem.* **10**, 1808-1812 (1971)
34. The stereochemistry of polynuclear compounds of the main group elements. A four-center and linear three-center methyl-bridged electron-deficient boron compound, D. Groves, W. E. Rhine, and G. D. Stucky, *J. Am. Chem. Soc.* **93**, 1553-1554 (1971)
35. Bonding and valence electron distribution in molecules: An X-Ray and neutron diffraction study of the crystal and molecular structure of tetracyanoethylene oxide, D. A. Matthews, J. Swanson, M. H. Mueller, and G. D. Stucky, *J. Am. Chem. Soc.* **93**, 5945-5953 (1971). Correction vol. 94, page 2557 (1972)

36. Bonding and valence electron distribution in molecules. Experimental determination of aspherical electron charge density in tetracyanoethylene oxide, D. A. Matthews and G. D. Stucky, *J. Am. Chem. Soc.* **93**, 5954-5959 (1971)
37.  $\pi$ -groups in ion pair bonding. Triphenylmethyl lithium tetramethylethylenediamine, J. J. Brooks and G. D. Stucky, *J. Am. Chem. Soc.* **94**, 7333-7338 (1972)
38.  $\pi$ -groups in ion pair bonding. Fluorenyllithium bisquinuclidine, J. J. Brooks, W. E. Rhine, and G. D. Stucky, *J. Am. Chem. Soc.* **94**, 7339-7346 (1972)
39.  $\pi$ -groups in ion pair bonding. Stabilization of the dianion of naphthalene by lithium tetramethylethylenediamine, J. J. Brooks, W. E. Rhine, and G. D. Stucky, *J. Am. Chem. Soc.* **94**, 7346-7351 (1972)
40. The structure of bis(methylammonium) tetrabromoferrate(III) bromide,  $(\text{H}_3\text{CNH}_3)_2 [\text{FeBr}_4]\text{Br}$ , G. D. Sproul and G. D. Stucky, *Inorg. Chem.* **11**, 1647-1650 (1972)
41. Effect of exchange coupling on the spectra of transition metal ions. The ligand field spectrum and crystal structure of  $\text{CsCrCl}_3$ , G. L. McPherson, T. J. Kistenmacher, J. B. Folkers, and G. D. Stucky, *J. Chem. Phys.* **57**, 3771-3780 (1972)
42.  $\pi$ -groups in ion pair bonding. The molecular structure of bis(tetrahydrofuran) sodium (9,10-dihydro-9,10-anthrylene)dimethylaluminumate  $[\text{Na}(\text{C}_4\text{H}_8\text{O})_2][\text{Al}(\text{CH}_3)_2\text{C}_{14}\text{H}_{10}]_2$ , a sodium/trimethylaluminum reduction product of anthracene, D. J. Brauer and G. D. Stucky, *J. Organomet. Chem.* **37**, 217-232 (1972)
43. Electron population analysis of accurate diffraction data. III. Application of one- and two-center formalisms to tetracyanoethylene oxide, D. A. Matthews, G. D. Stucky, and P. Coppens, *J. Am. Chem. Soc.* **94**, 8001-8008 (1972)
44. Bonding and valence electron distribution in molecules. Experimental binding energies and charge distributions in tetracyanoethylene, tetracyanoethylene oxide, tetracyanocyclopropane, cyclopropane, ethylene oxide, and related molecules, G. D. Stucky, D. A. Matthews, J. Hedman, M. Klasson, and C. Nordling, *J. Am. Chem. Soc.* **94**, 8009-8015 (1972)
45. The molecular structures of chelated alkali metal systems in solid state, G. D. Stucky, *Polymer Preprints 13 (2)*, American Chemical Society, Div. Polym. Chem., 644-648 (1972)
46. Charge density distribution in tetracyanoethylene oxide by difference Fourier techniques and population refinement of the diffraction data, D. A. Matthews and G. D. Stucky, *Transactions of the American Crystallographic Association* **8**, 113-131 (1972)
47. Synthetic studies of the reactions of chloroolefins with nickel carbonyl. Dimerization of 1,1,3,3,3-pentachloropropene, J. S. Swanson and G. D. Stucky, *Organometallics in Chemical Synthesis 1*, 467-470 (1972)
48. A  $\pi$ -carbanion Grignard reagent, C. Johnson, J. D. Toney, and G. D. Stucky, *J. Organomet. Chem.* **40**, C11-C13 (1972)
49. Effects of interionic coupling on the electronic spectra of the transition metal ions. The ligand field spectra of  $\text{CsNiCl}_3$  and  $\text{CsNiBr}_3$ , G. L. McPherson and G. D. Stucky, *J. Chem. Phys.* **57**, 3780-3786 (1972)
50. The crystal and molecular structure of tetramethylammonium 3, 3'-commo-bis[1, 2-dicarba-3-nickela-closo-dodecaborate] (1-), F. V. Hansen, R. G. Hazell, C. Hyatt, and G. D. Stucky, *Acta Chem. Scand.* **27**, 1210-1218 (1973)
51. The crystal structure of  $\text{CsMnCl}_3$  and a summary of the structures of  $\text{RMX}_3$  compounds, T.-I. Li, G. D. Stucky, and G. L. McPherson, *Acta Cryst. B* **29**, 1330-1335 (1973)
52. Exchange interactions in polynuclear transition metal complexes. Structural properties of cesium tribromocuprate(II),  $\text{CsCuBr}_3$ , a strongly coupled copper(II) system, T.-I. Li and G. D. Stucky, *Inorg. Chem.* **12**, 441-445 (1973)

53. Synthesis and crystal structure of bicyclo[1,1,0]butyllithium tetramethylethylenediamine, R. P. Zerger and G. D. Stucky, *J. Chem. Soc., Chem. Comm.*, 44-45 (1973)
54. Bonding and valence electron distributions in molecules. The crystal and molecular structure of 1,1,2,2-tetracyanocyclopropane, Y. Wang and G. D. Stucky, *Acta Cryst. B29*, 1255-1259 (1973)
55. The effect of exchange coupling on the spectra of transition metal ions. The crystal structure and optical spectrum of CsCrBr<sub>3</sub>, T.-I. Li and G. D. Stucky, *Acta Cryst. B29*, 1529-1532 (1973)
56. Stabilization of the higher oxidation states of nickel. Molecular structure of bis-(2,6-diacetylpyridine-dioximato)nickel(IV), G. Sproul and G. D. Stucky, *Inorg. Chem.* 12, 2898-2901 (1973)
57. Is squaric acid square? A combined X-ray and neutron diffraction study of 3,4-dihydroxycyclobut-3-ene-1,2-dione, Y. Wang, G. D. Stucky, and J. M. Williams, *J. Chem. Soc., Perkin Trans. 2*, 35-38 (1974)
58. Stereochemical properties of *N*-chelated alkali metal complexes, G. D. Stucky, Chapter 3 in *Polyamine-Chelated Alkali Metal Compounds*, edited by A. W. Langer (Advances in Chemistry Series No. 130), 56-112 (1974)
59. The squaric acid molecule: a hydrogen bond study of dimethylammonium hydrobis (hydrogen squarate) (H<sub>2</sub>NMe<sub>2</sub>)<sup>+</sup> [H<sub>3</sub>(C<sub>4</sub>O<sub>4</sub>)<sub>2</sub>]<sup>-</sup>, Y. Wang and G. D. Stucky, *J. Chem. Soc., Perkin Trans. 2*, 925-928 (1974)
60. Crystal structure and autoreactivity of diphenyl (phenylethynyl)aluminum dimer. A model for  $\pi$ -complexation between alkynes and organoaluminum compounds, G. D. Stucky, A. M. McPherson, W. E. Rhine, J. J. Eisch, and J. L. Considine, *J. Am. Chem. Soc.* 96, 1941-1942 (1974)
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