A tribute to Guosen Yan

Hua Guo · Daiqian Xie · Weita Yang

Published online: 15 October 2014
© Springer-Verlag Berlin Heidelberg 2014

Professor Guosen Yan was born in 1930 in Nanchong, Sichuan Province, China. He graduated in 1951 from Chongqing University, majoring in Chemistry, and upon graduation joined the faculty in the same university. In 1953, he was transferred to Department of Chemistry in Sichuan University, rising through the ranks and became Associate Professor in 1962 and Full Professor in 1979. He served as the President of Sichuan University from 1984 to 1989. His leadership helped to secure Sichuan University as one of the top comprehensive universities in China. Professor Yan has also served as a director and executive director of the Chinese Chemical Society and in many other important posts in China, helping to lay a solid foundation for the ongoing expansion of the Chinese research enterprise.

Published as part of the special collection of articles celebrating the 85th birthday of Professor Guosen Yan.

H. Guo (✉)
Department of Chemistry and Chemical Biology, University
of New Mexico, Albuquerque, NM 87131, USA
e-mail: hguo@unm.edu

D. Xie
Institute of Theoretical and Computational Chemistry, Key
Laboratory of Mesoscopic Chemistry, School of Chemistry
and Chemical Engineering, Nanjing University, Nanjing 210093,
China

W. Yang
Department of Chemistry, Duke University, Durham, NC 27708,
USA

W. Yang
Key Laboratory of Theoretical Chemistry of Environment,
Ministry of Education, School of Chemistry and Environment,
South China Normal University, Guangzhou 510006, China

Professor Yan is a pioneer in Theoretical Chemistry in China. He was one of eight original students of Professor Au-chin Tang, a Columbia-trained theoretical chemist, widely considered as the founding father of Theoretical Chemistry in China. Professor Yan's research interests spanned several areas, including crystal field theory, graph theory, quantum chemistry, and molecular spectroscopy. His major scientific contributions include (1) analysis of the symmetry and orthogonalization of the rotational group-point group coupling coefficients in ligand field theory, (2) graph theory for determinant expansions, (3) a vibrational self-consistent field/configuration interaction theory, and (4) molecular spectroscopy and potential energy surfaces. He has written three books and close to 200 journal articles.

Professor Yan has also been a great educator. His lectures were legendary. Whether it is quantum mechanics or group theory, he presented the materials in his characteristically meticulous fashion and filled the board with perfectly written derivations and equations, never miswriting or erasing anything. He has educated more than 20 graduate students (see list), many of whom have become accomplished scientists in China. His deep understanding of quantum mechanics and group theory greatly influenced his students.

In addition to being an accomplished scientist, Professor Yan also epitomizes a classical Confucius scholar. He read widely Chinese history, poetry, literature, and philosophy. Professor Yan is also an accomplished Chinese calligrapher. He has not only influenced many researchers through his scientific insights, but also helped many of us to shape our views of science, philosophy, and life.

On this occasion of Professor Yan's 85th birthday, we celebrate his accomplishments in science and education in this Special Collection. The breadth and depth of the work reported here are testaments of the vitality of theoretical

and computational chemistry in China, the fruits of the seeds sown by Professor Yan and his contemporaries.

List of students of Professor Guosen Yan

	Year	First name	Last name	中文姓名
M.S.	1978	Yaoming	Xie	谢尧明
	1981	Kaiqin	Lao	劳开勤
		Huai	Sun	孙淮
	1982	Daping	Cao	曹大平
		Hua	Guo	郭华
		Zhi	He	何知
	1983	Gaoqing	Yuan	袁高清
		Chongde	Zheng	郑重德
	1984	Ruifeng	Liu	刘瑞峰
		Kehe	Su	苏克和
		Xingquan	Xiang	向兴全
		Xuefeng	Zhou	周学峰
Ph.D.	1987	Jie	Yang	杨捷
	1988	Changyuan	Tao	陶长元
	1989	Guoming	Liang	梁国明
	1990	Zexing	Cao	曹泽星
		Huabei	Zhang	张华北
	1991	Junkai	Xie	谢军楷
	1992	Xiangyuan	Li	李象远
		Jiande	Gu	顾建德
	1993	Hui	Xian	先晖
	1994	Ying	Xue	薛英
		Minghui	Yang	杨明晖
	1995	Yi	Ren	任译
	1996	Xuejun	Xu	徐学军

1 Publications of Professor Guosen Yan

- G. S. Yan and M. X. Карапетьянц, *J. Sichuan U.* **4**, 51–54 (1959).
- M. X. Карапетьянц and G. S. Yan, *J. Sichuan U.* **6**, 65–70 (1959).
- M. X. Карапетьянц and G. S. Yan, *J. Sichuan U.* **6**, 71–76 (1959).
- M. X. Карапетьянц and G. S. Yan, *Zurnal. fiz. Chem. (russ)* **34**, 1647 (1960).
- M. X. Карапетьянц and G. S. Yan, *J. High. Edu. (russ)* **4**, 99 (1960).
- G. S. Yan and M. X. Карапетьянц, *J. Sichuan U.* **1**, 103–106 (1962). *Zurnal. fiz. Chem. (russ)* **34**, 1647 (1960).
- M. X. Карапетьянц and G. S. Yan, *J. High. Edu. (russ)* **4**, 480 (1961).
- G. S. Yan and M. X. Карапетьянц, *J. Sichuan U.* **1**, 93–103 (1962). *Zurnal. fiz. Chem. (russ)* **37**, 2041 (1963).
- Academic discussion on structural chemistry, *Acta Sci. Nat. U. Jilin.* **3**, 79–100 (1964).
- Academic discussion on structural chemistry, *Acta Sci. Nat. U. Jilin.* **1**, 59–70 (1965).
- A. Q. Tang and G. S. Yan, *Theoretical Method of the Ligand Field Theory*, Science Press, Beijing (1979).
- A. Q. Tang, Y. S. Jiang, G. S. Yan and S. S. Dai, *Graph Theoretical Molecular Orbitals*, Science Press, Beijing (1986).
- G. S. Yan, *Int. J. Quantum. Chem.* **14**, 549–550 (1980).
- G. S. Yan, Z. M. Sun, S. X. Xiao and X. F. Zhou, *J. Atom. Mol. Phys.* **2**, 68–83 (1985).
- H. Sun, A. M. Tian and G. S. Yan, *Int. J. Quantum Chem.* **29**, 1303–1324 (1986).
- W. G. Sun, Y. M. Xie, A. M. Tian and G. S. Yan, *Chem. J. Chinese U.* **7**, 448–452 (1986).
- G. S. Yan, Z. M. Sun, S. X. Xiao and X. F. Zhou, *Chem. J. Chinese U.* **7**, 351–356 (1986).
- G. S. Yan, Z. M. Sun, S. X. Xiao, X. F. Zhou and Y. Xue, *Acta Phys-Chim Sin.* **2**, 505–511 (1986).
- K. Q. Lao, A. M. Tian and G. S. Yan, *J. Atom. Mol. Phys.* **3**, 189–196 (1986).
- C. D. Zheng, G. S. Yan, Z. M. Sun, A. M. Tian and S. X. Xiao, *J. Atom. Mol. Phys.* **4**, 501–506 (1987).
- H. Guo, A. M. Tian and G. S. Yan, *J. Mol. Sci. (Theochem)* **149**, 105–109 (1988).
- A. M. Tian, R. F. Liu, Z. M. Sun and G. S. Yan, *Chem. J. Chinese U.* **8**, 836–837 (1988).

23. G. S. Yan, Z. M. Sun, S. X. Xiao and Y. Xue, *Chem. J. Chinese U.* **9**, 700–705 (1988).
24. G. Q. Yuan, A. M. Tian, Z. H. Tang and G. S. Yan, *J. Atom. Mol. Phys.* **5**, 803–810 (1988).
25. A. M. Tian, R. F. Liu, Z. M. Sun, X. F. Zhou and G. S. Yan, *Int. J. Quantum. Chem.* **36**, 765–771 (1989).
26. C. D. Zheng, G. S. Yan, Z. M. Sun and S. X. Xiao, *Acta Chim. Sinica* **47**, 603–608 (1989).
27. A. M. Tian, G. Q. Yuan, Z. H. Tang and G. S. Yan, *Chem. J. Chinese U.* **10**, 826–830 (1989).
28. Z. M. Sun, Z. X. Cao and G. S. Yan, *Chinese J. Chem. Phys.* **3**, 350–356 (1990).
29. S. X. Xiao, J. Ji, T. L. Chen, T. C. Cai and G. S. Yan, *J. Mol. Struct. (Theochem)* **204**, 33–40 (1990).
30. Z. R. Li, A. M. Tian and G. S. Yan, *J. Sichuan U. (Nat. Sci. Edit.)* **28**, 401–402 (1991).
31. Z. M. Sun, Z. X. Cao and G. S. Yan, *J. Atom. Mol. Phys.* **2**, 1859–1864 (1991).
32. M. Tian, G. M. Liang and G. S. Yan, *Quantum Chemistry Computational Methods of Chemical Bonds*, Sichuan University Press, Chengdu (1992).
33. Z. X. Cao, Z. M. Sun and G. S. Yan, *J. Sichuan U. (Nat. Sci. Edit.)* **29**, 246–253 (1992).
34. T. L. Chen, J. Ji, S. X. Xiao, T. Cai and G. S. Yan, *Int. J. Quantum. Chem.* **44**, 1015–1025 (1992).
35. G. S. Yan, Z. X. Cao, G. Liang and A. M. Tian, *J. Mol. Struct. (Theochem)* **282**, 283–286 (1993).
36. A. M. Tian, Z. X. Cao, J. L. Zhang and G. S. Yan, *J. Mol. Struct. (Theochem)* **285**, 293–296 (1993).
37. D. Q. Xie, G. S. Yan, J. K. Xie and A. M. Tian, *Chinese Chem. Lett.* **4**, 175–178 (1993).
38. J. Yang, G. S. Yan, A. M. Tian, A. Q. Tang and Q. S. Li, *Chinese Chem. Lett.* **4**, 93–94 (1993).
39. Z. X. Cao, A. M. Tian and G. S. Yan, *Chinese Sci. Bull.* **38**, 233–235 (1993).
40. Z. X. Cao, G. S. Yan and A. M. Tian, *Chem. J. Chinese U.* **14**, 711–713 (1993).
41. G. M. Liang, A. M. Tian and G. S. Yan, *Chem. J. Chinese U.* **14**, 1705–1709 (1993).
42. Z. M. Sun, J. S. Li and G. S. Yan, *Chem. J. Chinese U.* **14**, 1560–1564 (1993).
43. Z. X. Cao, G. M. Liang, A. M. Tian, G. S. Yan, A. Q. Tang and S. Q. Li, *Acta Phys-Chim Sin.* **9**, 770–775 (1993).
44. G. M. Liang, J. D. Gu, A. M. Tian and G. S. Yan, *J. Sichuan U. (Nat. Sci. Edit.)* **30**, 370–374 (1993).
45. Z. H. Tang, H. P. Zhou, G. S. Yan and A. M. Tian, *J. Sichuan U. (Nat. Sci. Edit.)* **30**, 375–379 (1993).
46. J. Yang, A. M. Tian, G. M. Liang and G. S. Yan, *J. Sichuan U. (Nat. Sci. Edit.)* **30**, 233–237 (1993).
47. Z. X. Cao, G. M. Liang, A. M. Tian, G. S. Yan, A. Q. Tang and S. Q. Li, *Chinese J. Chem. Phys.* **5**, 491–498 (1993).
48. Z. X. Cao, Z. M. Sun and G. S. Yan, *Chem. J. Chinese U.* **13**, 398–400 (1993).
49. G. S. Yan, D. Q. Xie and A. M. Tian, *J. Phys. Chem.* **98**, 8870–8875 (1994).
50. J. Yang, G. M. Liang, A. M. Tian, J. D. Gu and G. S. Yan, *Acta Chim. Sinica* **52**, 562–566 (1994).
51. Z. X. Cao, G. M. Liang, A. M. Tian and G. S. Yan, *Acta Chim. Sinica* **52**, 223–227 (1994).
52. X. Y. Li, F. C. He, A. M. Tian and G. S. Yan, *Chem. Onl.* **12**, 17–21 (1994).
53. J. Yang, A. M. Tian, G. M. Liang and G. S. Yan, *Chem. J. Chinese U.* **15**, 249–250 (1994).
54. D. Q. Xie, G. S. Yan and A. M. Tian, *Chem. J. Chinese U.* **15**, 1220–1221 (1994).
55. J. D. Gu, A. M. Tian and G. S. Yan, *Chem. J. Chinese U.* **15**, 886–890 (1994).
56. J. D. Gu, A. M. Tian and G. S. Yan, *Chem. J. Chinese U.* **15**, 1222–1224 (1994).
57. H. B. Zhang, G. M. Liang, A. M. Tian and G. S. Yan, *Acta Phys-Chim Sin.* **10**, 360–362 (1994).
58. Z. X. Cao, A. M. Tian and G. S. Yan, *Acta Phys-Chim Sin.* **10**, 387–390 (1994).
59. H. B. Zhang, A. M. Tian and G. S. Yan, *Acta Phys-Chim Sin.* **10**, 481–483 (1994).
60. J. Yang, G. M. Liang, A. M. Tian and G. S. Yan, *Acta Phys-Chim Sin.* **10**, 367–370 (1994).
61. J. L. Zhang, Z. X. Cao, J. D. Gu, A. M. Tian and G. S. Yan, *Acta Phys-Chim Sin.* **10**, 396–398 (1994).
62. J. Yang, G. M. Liang, A. M. Tian and G. S. Yan, *Chinese J. Chem. Phys.* **7**, 34–38 (1994).
63. Z. H. Tang, H. P. Zhou, Z. M. Sun, G. S. Yan and A. M. Tian, *Chinese J. Chem. Phys.* **7**, 221–226 (1994).
64. Z. X. Cao, A. M. Tian and G. S. Yan, *Chinese J. Chem. Phys.* **7**, 437–442 (1994).
65. Z. M. Sun, J. S. Li and G. S. Yan, *Chinese J. Chem. Phys.* **7**, 111–117 (1994).
66. Z. H. Tang, J. S. Chen, Z. M. Sun, Y. Xue, G. S. Yan and A. M. Tian, *J. Sichuan U. (Nat. Sci. Edit.)* **31**, 232–237 (1994).
67. Z. H. Tang, L. C. Li, Z. M. Sun and G. S. Yan, *J. Sichuan U. (Nat. Sci. Edit.)* **31**, 364–370 (1994).
68. G. M. Liang, A. M. Tian and G. S. Yan, *J. Sichuan U. (Nat. Sci. Edit.)* **31**, 238–245 (1994).
69. Z. H. Tang, J. S. Chen, Z. M. Sun, G. S. Yan and A. M. Tian, *J. Atom. Mol. Phys.* **11**, 232–237 (1994).
70. C. Y. Tao, J. L. Luo, Z. R. Li and G. S. Yan, *J. Atom. Mol. Phys.* **11**, 360–368 (1994).
71. X. Y. Li, F. C. He, A. M. Tian and G. S. Yan, *J. Mol. Struct. (Theochem)* **342**, 181–186 (1995).
72. Z. X. Cao, J. L. Zhang, A. M. Tian and G. S. Yan, *J. Mol. Struct. (Theochem)* **333**, 191–197 (1995).
73. L. X. Zhou, J. L. Zhang, A. M. Tian and G. S. Yan, *J. Mol. Struct. (Theochem)* **358**, 173–177 (1995).

74. X. Y. Li, A. M. Tian, F. C. He and G. S. Yan, *Chem. Phys. Lett.* **233**, 227–230 (1995).
75. J. D. Gu, A. M. Tian and G. S. Yan, *Chinese Sci. Bull.* **40**, 1972–1977 (1995).
76. G. S. Yan and D. Q. Xie, *Chinese Sci. Bull.* **40**, 1797–1800 (1995).
77. X. Y. Li, A. M. Tian, F. C. He and G. S. Yan, *Chinese Sci. Bull.* **40**, 1698–1702 (1995).
78. D. Q. Xie, G. S. Yan and A. M. Tian, *Chinese J. Chem.* **13**, 510–514 (1995).
79. G. P. Li, A. M. Tian and G. S. Yan, *Acta Chim. Sinica.* **53**, 332–335 (1995).
80. H. B. Zhang, A. M. Tian and G. S. Yan, *Chinese Chem. Lett.* **6**, 357–360 (1995).
81. J. K. Xie, D. Q. Xie, G. S. Yan and A. M. Tian, *Chem. J. Chinese U.* **16**, 1940–1944 (1995).
82. H. B. Zhang, C. W. Hu, A. M. Tian and G. S. Yan, *Chem. J. Chinese U.* **16**, 626–628 (1995).
83. Z. H. Tang, J. S. Chen, Z. M. Sun, A. M. Tian and G. S. Yan, *Chem. J. Chinese U.* **16**, 761–764 (1995).
84. J. L. Zhang, J. D. Gu, A. M. Tian, G. S. Yan and Y. B. Wang, *Acta Chim. Sinica* **53**, 665–669 (1995).
85. X. Y. Li, A. M. Tian, F. C. He and G. S. Yan, *Acta Chim. Sinica* **53**, 933–936 (1995).
86. H. B. Zhang, A. M. Tian and G. S. Yan, *Acta Chim. Sinica* **53**, 538–542 (1995).
87. G. M. Liang, J. D. Gu, A. M. Tian and G. S. Yan, *Acta Chim. Sinica* **53**, 961–965 (1995).
88. G. P. Li, A. M. Tian and G. S. Yan, *Acta Chim. Sinica* **53**, 332–335 (1995).
89. G. P. Li, H. B. Zhang, A. M. Tian and G. S. Yan, *Acta Phys-Chim Sin.* **11**, 211–217 (1995).
90. H. B. Zhang, A. M. Tian and G. S. Yan, *Acta Phys-Chim Sin.* **11**, 142–146 (1995).
91. J. D. Gu, A. M. Tian and G. S. Yan, *Acta Phys-Chim Sin.* **11**, 719–723 (1995).
92. J. Yang, Z. H. Tang, D. Y. Wu, Z. R. Li, A. M. Tian and G. S. Yan, *Acta Phys-Chim Sin.* **11**, 1008–1013 (1995).
93. Z. R. Li, J. Yang, M. H. Yang, A. M. Tian and G. S. Yan, *J. Sichuan U. (Nat. Sci. Edit.)* **32**, 701–705 (1995).
94. Z. H. Tang, L. C. Li, Z. M. Sun, A. M. Tian and G. S. Yan, *J. Atom. Mol. Phys.* **12**, 190–201 (1995).
95. Z. H. Tang, Z. P. Huang, Z. M. Sun, A. M. Tian and G. S. Yan, *J. Atom. Mol. Phys.* **12**, 293–298 (1995).
96. Z. H. Tang, L. C. Li, Z. P. Huang, Z. M. Sun, A. M. Tian and G. S. Yan, *Chinese J. Syn. Chem.* **3**, 235–238 (1995).
97. D. Q. Xie and G. S. Yan, *Chem. Phys. Lett.* **248**, 409–413 (1996).
98. D. Q. Xie and G. S. Yan, *Mol. Phys.* **88**, 1349–1355 (1996).
99. Li X, A. M. Tian, F. C. He and G. S. Yan, *J. Comput. Chem.* **17**, 1108–1111 (1996).
100. J. D. Gu, J. L. Zhang, M. A. Tian and G. S. Yan, *Acta Chim. Sinica.* **54**, 320–324 (1996).
101. D. Q. Xie and G. S. Yan, *Sci. China (B)* **39**, 439–448 (1996).
102. J. D. Gu, A. M. Tian and G. S. Yan, *Sci. China (B)* **39**, 29–36 (1996).
103. Z. H. Tang, L. C. Li, Z. M. Sun, G. S. Yan and H. P. Zhou, *Sci. China (B)* **39**, 269–275 (1996).
104. L. X. Zhou, D. L. Zhang, A. M. Tian and G. S. Yan, *Chinese Chem. Lett.* **7**, 59–62 (1996).
105. J. K. Xie, D. Q. Xie, A. M. Tian and G. S. Yan, *Acta Chim. Sinica* **54**, 261–265 (1996).
106. J. K. Xie, D. Q. Xie and G. S. Yan, *Acta Chim. Sinica* **54**, 756–763 (1996).
107. J. D. Gu, J. L. Zhang, A. M. Tian and G. S. Yan, *Acta Chim. Sinica* **54**, 320–324 (1996).
108. J. D. Gu, A. M. Tian and G. S. Yan, *Acta Chim. Sinica* **54**, 331–337 (1996).
109. L. X. Zhou, A. M. Tian, J. C. Li, Y. Z. Chen and G. S. Yan, *Chem. J. Chinese U.* **17**, 117–120 (1996).
110. H. B. Zhang, J. L. Zhang, Z. R. Li, A. M. Tian and G. S. Yan, *J. Sichuan U. (Nat. Sci. Edit.)* **33**, 307–310 (1996).
111. H. B. Zhang, A. M. Tian and G. S. Yan, *J. Sichuan U. (Nat. Sci. Edit.)* **33**, 718–722 (1996).
112. J. Yang, D. Y. Wu, Z. H. Tang, Z. R. Li, A. M. Tian and G. S. Yan, *J. Sichuan U. (Nat. Sci. Edit.)* **33**, 723–727 (1996).
113. G. S. Yan, M. H. Yang and D. Q. Xie, *Chem. Phys. Lett.* **275**, 494–498 (1997).
114. G. S. Yan, H. Xian and D. Q. Xie, *Chem. Phys. Lett.* **271**, 157–162 (1997).
115. G. S. Yan, M. H. Yang and D. Q. Xie, *Sci. China (B)* **40**, 554–560 (1997).
116. G. S. Yan, H. Xian and D. Q. Xie, *Sci. China (B)* **40**, 342–347 (1997).
117. G. S. Yan, J. K. Xie and D. Q. Xie, *Chinese Sci. Bull.* **42**, 43–46 (1997).
118. J. K. Xie, G. S. Yan and D. Q. Xie, *Chinese Sci. Bull.* **42**, 268–272 (1997).
119. D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **18**, 1136–1140 (1997).
120. H. Xian, D. Q. Xie and G. S. Yan, *Acta Phys-Chim Sin.* **13**, 865–867 (1997).
121. G. S. Yan, H. Xian and D. Q. Xie, *Sci. China (B)* **27**, 228–234 (1997).
122. G. S. Yan, M. H. Yang and D. Q. Xie, *Sci. China (B)* **27**, 527–533 (1997).
123. Z. M. Sun, B. Wang and G. S. Yan, *Acta Chim. Sinica* **55**, 9–12 (1997).

124. G. S. Yan, J. K. Xie and D. Q. Xie, *Acta Chim. Sinica* **55**, 1041–1046 (1997).
125. G. S. Yan, H. Xian, and D. Q. Xie, *Mol. Phys.* **93**, 867–872 (1998).
126. G. S. Yan, M. H. Yang, and D. Q. Xie, *Chem. Phys. Lett.* **287**, 162–168 (1998).
127. G. S. Yan, M. H. Yang, and D. Q. Xie, *J. Chem. Phys.* **109**, 10284–10292 (1998).
128. H. Xian, D. Q. Xie, and G. S. Yan, *Sci. China (B)* **41**, 320–324 (1998).
129. H. Xian, D. Q. Xie and G. S. Yan, *Sci. China (B)* **28**, 243–246 (1998).
130. G. S. Yan, Y. Xue, and D. Q. Xie, *Sci. China (B)* **41**, 91–96 (1998).
131. G. S. Yan, Y. Xue, and D. Q. Xie, *Int. J. Quant. Chem.* **72**, 53–60 (1999).
132. Y. Xue, X. J. Xu, D. Q. Xie and G. S. Yan, *J. Mol. Struc.* **469**, 151–165 (1999).
133. M. L. Yang, Z. M. Sun, and G. S. Yan, *Sci. China (B)* **42**, 70–76 (1999).
134. M. L. Yang, Z. M. Sun and G. S. Yan, *Sci. China (B)* **29**, 206–211 (1999).
135. H. Zhu, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **20**, 1910–1915 (1999).
136. Y. Xue, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **20**, 1102–1105 (1999).
137. M. L. Yang, Z. M. Sun and G. S. Yan, *Chem. J. Chinese U.* **20**, 450–453 (1999).
138. X. J. Xu, Y. Xue, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **20**, 941–947 (1999).
139. Y. H. Lu, H. Xian, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **20**, 1291–1294 (1999).
140. M. L. Yang, Z. M. Sun, D. Q. Xie and G. S. Yan, *Chinese J. Chem. Phys.* **12**, 717–721 (1999).
141. M. L. Yang, Z. M. Sun and G. S. Yan, *Chinese J. Chem. Phys.* **12**, 282–287 (1999).
142. M. L. Yang, Z. M. Sun and G. S. Yan, *J. Atom. Mol. Phys.* **16**, 413–417 (1999).
143. M. L. Yang, Z. M. Sun and G. S. Yan, *Acta Phys-Chim Sin.* **15**, 693–697 (1999).
144. Y. Xue, D. Q. Xie and G. S. Yan, *Acta Phys-Chim Sin.* **15**, 138–142 (1999).
145. M. L. Yang, Z. M. Sun and G. S. Yan, *Acta Chim. Sinica* **57**, 754–759 (1999).
146. X. J. Xu, Y. Xue, D. Q. Xie and G. S. Yan, *Acta Chim. Sinica* **57**, 680–684 (1999).
147. Y. H. Lu, D. Q. Xie, M. H. and G. S. Yan, *Chem. Phys. Lett.* **327**, 305–313 (2000).
148. Y. Xue, D. G. Xu, D. Q. Xie and G. S. Yan, *Spectrochim Acta A* **56**, 1929–1938 (2000).
149. X. J. Xu, D. Q. Xie, Y. Xue and G. S. Yan, *Spectrochim Acta A* **56**, 567–574 (2000).
150. M. H. Yang, D. Q. Xie and G. S. Yan, *Sci. China (B)* **43**, 196–200 (2000).
151. Y. Xue, D. Q. Xie, and G. S. Yan, *Int. J. Quant. Chem.* **76**, 86–699 (2000).
152. Y. H. Lu, D. Q. Xie, and G. S. Yan, *Int. J. Quant. Chem.* **78**, 269–280 (2000).
153. Y. Xue, D. G. Xu, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **21**, 1293–1298 (2000).
154. D. G. Xu, Y. H. Lu, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **21**, 1884–1887 (2000).
155. H. Y. Xiao, Y. Xue, X. J. Xu, D. Q. Xie and G. S. Yan, *Acta Chim. Sinica* **58**, 414–417 (2000).
156. Y. Xue, Y. Guo, X. J. Xu, D. Q. Xie and G. S. Yan, *Acta Chim. Sinica* **58**, 1254–1258 (2000).
157. Y. H. Lu, Y. Z. Zhou, D. Q. Xie and G. S. Yan, *Acta Chim. Sinica* **58**, 1516–1521 (2000).
158. M. H. Yang, D. Q. Xie and G. S. Yan, *Sci. China (B)* **30**, 28–32 (2000).
159. J. K. Xie and G. S. Yan, *Chinese Sci. Bull.* **45**, 2606–2610 (2000).
160. D. Q. Xie, Y. H. Lu, D. G. Xu and G. S. Yan, *Chem. Phys.* **270**, 415–428 (2001).
161. D. Q. Xie, Y. H. Lu and G. S. Yan, *Chem. Phys. Lett.* **339**, 14–22 (2001).
162. J. K. Xie and G. S. Yan, *Chin. Sci. Bull.* **46**, 650–652 (2001).
163. Y. Xue, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **22**, 1189–1192 (2001).
164. Y. Guo, D. Q. Xie, Y. Xue and G. S. Yan, *Chem. J. Chinese U.* **22**, 2061–2064 (2001).
165. H. Zhu, D. Q. Xie and G. S. Yan, *Chem. Phys. Lett.* **351**, 149–157 (2002).
166. C. Zhou, D. Q. Xie, R. Q. Chen, G. S. Yan and H. Guo, *Spectrochim Acta A* **58**, 727–746 (2002).
167. H. Zhu, J. Li, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **23**, 2137–2141 (2002).
168. Y. Guo, D. Q. Xie, Y. Xue and G. S. Yan, *Acta Chim. Sinica* **60**, 660–663 (2002).
169. Y. Wu, K. L. Xu, Y. Xue, D. Q. Xie and G. S. Yan, *Acta Chim. Sinica* **60**, 2092–2096 (2002).
170. H. Zhu, D. Q. Xie and G. S. Yan, *J. Chem. Phys.* **24**, 1839–1845 (2003).
171. J. Li, D. Q. Xie and G. S. Yan, *Sci. China (B)* **46**, 113–118 (2003).
172. H. Y. Xiao, W. Z. Lai, D. Q. Xie and G. S. Yan, *Sci. China (B)* **46**, 425–430 (2003).
173. J. Li, H. Zhu, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **24**, 686–689 (2003).
174. K. L. Xu, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **24**, 2031–2034 (2003).
175. H. Zhang, Y. Xue, K. L. Xu, D. Q. Xie and G. S. Yan, *Acta Chim. Sinica* **61**, 1926–1929 (2003).

176. J. Li, D. Q. Xie, G. S. Yan and D. Q. Xie, *Sci. China (B)* **33**, 21–25 (2003).
177. H. Y. Xiao, W. Z. Lai, D. Q. Xie and G. S. Yan, *Sci. China (B)* **33**, 239–244 (2003).
178. J. X. Chen, H. Zhu, D. Q. Xie and G. S. Yan, *Acta Chim. Sinica* **62**, 5–9 (2004).
179. K. L. Xu, Y. Wu, D. Q. Xie and G. S. Yan, *Chinese Sci. Bull.* **49**, 535–537 (2004).
180. Y. Z. Zhou, H. Zhu, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **25**, 1081–1084 (2004).
181. K. L. Xu, D. Q. Xie and G. S. Yan, *Acta Chim. Sinica* **62**, 2003–2006 (2004).
182. Y. Xue, H. Zhang, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **26**, 907–911 (2005).
183. Y. Guo, Y. Xue, D. Q. Xie and G. S. Yan, *Chem. J. Chinese U.* **26**, 1686–1689 (2005).
184. H. Zhang, Y. Xue, D. Q. Xie and G. S. Yan, *Acta Chim. Sinica* **63**, 791–796 (2005).
185. L. Jin, Y. Wu, Y. Xue, Y. Guo, D. Q. Xie and G. S. Yan, *Acta Chim. Sinica* **64**, 873–878 (2006).
186. B. He, Y. Xue, Y. Guo and G. S. Yan, *Acta Chim. Sinica* **65**, 481–488 (2007).
187. Y. Zeng, Y. Xue and G. S. Yan, *J. Phys. Chem. B* **112**, 10659–10667 (2008).
188. D. G. Xu and G. S. Yan, *Chem. J. Chinese U.* **29**, 2453–2456 (2008).
189. C. H. Zhang, Y. Xue, Y. Guo and G. S. Yan, *Chem. J. Chinese U.* **29**, 2354–2359 (2008).
190. Y. Y. Sun, C. H. Zhang, Y. Xue and G. S. Yan, *Acta Chim. Sinica* **66**, 751–756 (2008).
191. J. L. Liu, Y. Guo, Y. Xue and G. S. Yan, *Chem. J. Chinese U.* **30**, 100–105 (2009).
192. R. Chen, H. Zhu, D. Q. Xie and G. S. Yan, *Sci. China (B)* **52**, 1987–1990 (2009).
193. P. Zou, Q. G. Li, Y. Xue and G. S. Yan, *Acta Chim. Sinica* **67**, 2427–2432 (2009).
194. Q. G. Li, Y. Xue, Y. Guo and G. S. Yan, *Acta Phys-Chim. Sin.* **26**, 1965–1975 (2010).
195. Y. Zeng, Y. Xue and G. S. Yan, *J. Phys. Chem. A* **115**, 4995–5004 (2011).