

# References

- [1] P. Tamarat, A. Maali, B. Lounis and M. Orrit, J. Phys. Chem. A, **104**, 1-16 (2000).
- [2] M. Orrit, J. Chem. Phys. **117**, 10938-10946 (2002).
- [3] W. Ho, J. Chem. Phys. **117**, 11033-11061 (2002).
- [4] D.C. Nguyen, R.A. Keller, J.H. Jett and J.C. Martin, Anal. Chem. **59**, 2158-2161 (1987).
- [5] S. Nie and S.R. Emory, Science **275**, 1102-1106 (1997).
- [6] C. Eggeling, J. Schaffer, C.A.M. Seidel, J. Korte, G. Brehm, S. Schneider and W. Schrof, J. Phys. Chem. A **105**, 3673-3679 (2001).
- [7] A.M. Michaels, M. Nirmal and L.E. Brus, J. Am. Chem. Soc. **121**, 9932-9939 (1999).
- [8] H. Xu, E.J. Bjerneld, M. Kall and L. Borjesson, Phys. Rev. Lett. **83**, 4357-4360 (1999).
- [9] H. Jezirovowski and H. Knozinger, J. Phys. Chem. **83**, 1166-1173 (1979).
- [10] M.Fleischmann, P.J. Hendra and A.J. McQuillan, Chem. Phys. Lett. **26**, 163-166 (1974).
- [11] D.L. Jeanmarie and R.P. Van Duyne, J. Electroanal. Chem. **84**, 1-20 (1977).
- [12] Loudon R., *The Quantum Theory of Light* (Clarendon Press, Oxford, 1984).
- [13] M.Fleischmann, P.J. Hendra and A.J. McQuillan, J. Chem. Soc.-Chem. Comm. 80-81 (1973).

- [14] Chang. R.K. and Furtak T.E., *Surface Enhanced Raman Spectroscopy* (Plenum Press, New York, 1986)
- [15] Z. Tian, Ren B. and D. Wu, J. Phys. Chem. **106**, 9463-9482 (2002).
- [16] M. moskovits, Rev. Mod. Phys. **57**, 783-826 (1985).
- [17] A. Campion and P. Kambhampati **27**, 241-250 (1998).
- [18] G.C. Schatz, Acc. Chem. Res. **17**, 307-376 (1984).
- [19] E. Kretschmann and H. Raether, Z. Naturf. **23**, 2135 (1968).
- [20] Kretschmann H., *Surface Plasmons on smooth and rough surfaces and on gratings* (Springer, Berlin, 1988)
- [21] Kittel C., *Introduction to Solid State Physics* (Wiley, New York, 1986)
- [22] F.J. Garcia-Vidal and J.B. Pendry, Phys. Rev. Lett. **77**, 1163-1166 (1996).
- [23] J.P. Kottman, O.J.F. Martin, D.R. Smith and S. Schultz, Chem. Phys. Lett. **6423**, 235402 (2001).
- [24] J.P. Kottman, O.J.F. Martin, D.R. Smith and S. Schultz, Phys. Rev. B **341**, 1-6 (2001).
- [25] B. Pignataro, A. De Bonis and G. Compagnini, J. Chem. Phys. **113**, 5947-5953 (2000).
- [26] A.G. Malshukov, Phys. Rep. **194**, 343-349 (1990).
- [27] W. Kim, V.P. Safonov, V.M. Shalaev and R.L. Armstrong, Phys. Rev. Lett. **82**, 4811-4814 (1999).
- [28] E. Poliakov, V.M. Shalaev, V. Shubin and V.A. Markel, Phys. Rev. Lett. **60**, 10739-10742 (1999).
- [29] N. Felidi, J. Aubard and G. Levi, Phys. Stat. Sol. (a) **175**, 367-372 (1999).

- [30] M. Micic, N. Klymyshyn, Y.D. Suh and H.P. Liu, *J. Phys. Chem. B*, in press.
- [31] B. Pettinger, *J. Chem. Phys.* **85**, 7442-7451 (1986).
- [32] K. Kneipp, A.S. Haka, H. Kneipp, K. Badizadegan, N. Yoshizawa, C. Boone, K.E. Shafer-Peltier, J.T. Motz, R.R. Dasari and M.S. Feld, *Appl. Spectr.* **56**, 150-154 (2002).
- [33] K. Kneipp, H. Kneipp, R. Manoharan, E.B. Hanlon, I. Itzkan, R.R. Dasari and M.S. Feld, *Appl. Spectr.* **52**, 1493-1497 (1998).
- [34] K. Kneipp, H. Kneipp, I. Itzkan, R.R. Dasari and M.S. Feld, *Chem. Phys.* **247**, 155-162 (1999).
- [35] K. Kneipp, Y. Wang, H. Kneipp, I. Itzkan, R.R. Dasari and M.S. Feld, *Phys. Rev. Lett.* **76**, 2444-2448 (1996).
- [36] H.S. Shin, H.J. Yang, Y.M. Jung and S.B. Kim, *Vib. Spectr.* **29**, 79-82 (2002).
- [37] R.G. Freeman, R.M. Bright, M.B. Hommer and M.J. Natan, *J. Raman Spectr.* **30**, 733-738 (1999).
- [38] S. Franzen, J.C.W. Folmer, W.R. Glomm and R. Oneill, *J. Phys. Chem. A* **106**, 6533-6540 (2002).
- [39] P.J. Moyer, J. Schmidt, L.M. Eng and A.J. Meixner, *J. Am. Chem. Soc.* **122**, 5409-5410 (2000).
- [40] S.R. Emory and S. Nie **69**, 2631-2635 (1997).
- [41] T.E. Furtak and S.H. Macomber, *Chem. Phys. Lett.* **104**, 328-332 (1983).
- [42] J.R. Lombardi, R.L. Birke, L.A. Sanchez, I. Bernard and S.C. Sun, *Chem. Phys. Lett.* **104**, 240-247 (1984).
- [43] U. Durig, D.W. Pohl and F. Rohner, *J. Appl. Phys.* **59**, 3318-3327 (1986).

- [44] D.W. Pohl, W. Denk and M. Lanz, Appl. Phys. Lett. **44**, 651-653 (1984).
- [45] E. Betzig and R.J. Chichester, Science **262**, 1422-1425 (1993).
- [46] B. Hecht, B. Sick, U.P. Wild, V. Deckert, R. Zenobi, O.J. Martin, D.W. Pohl, J. Chem. Phys. **112**, 7761-7774 (2000).
- [47] Pohl D., *Scanning Near-field Optical Microscopy (SNOM), Advances in Optical and Electron Microscopy, Vol. 12* (Academic, New York, 1991).
- [48] P. Kruit, M. Paesler and N. van Hulst *Near Field Optics and Related Techniques, Ultramicroscopy, Vol. 61* (Elsevier, Amsterdam, 1995).
- [49] B. Ren, Q.J. Huang, W.B. Cai, B.W. Mao, F.M. Liu and Z.Q. Tian, J. Electroanal. Chem. **415**, 175-178 (1996).
- [50] W.B. Cai, B. Ren, X.Q. Li, C.X. She, F.M. Liu X.W. Cai and Z.Q. Tian, Surf. Sci. **406**, 9-22 (1998).
- [51] V.M. Hallmark and A. Campion, J. Chem. Phys.. **84**, 2933-2941 (1986).
- [52] B. Pettinger and U. Wenning, Chem. Phys. Lett. **56**, 253-257 (1978).
- [53] C. Shannon and A. Campion, J. Chem. Phys. **92**, 1385-1387 (1988).
- [54] A.G. Brolo, D.E. Irish and J. Lipkowski, J. Phys. Chem. B **101**, 3906-3909 (1997).
- [55] D.R. Mullins and A. Campion, Chem. Phys. Lett. **110**, 565-570 (1984).
- [56] S.A. Bilmes, Chem. Phys. Lett. **71**, 140 (1990).
- [57] V.A. Markel, V.M. Shalaev, P. Zhang, W. Huynh, L. Tay, T.L. Haslett and M. Moskovits, Phys. Rev. B **59**, 10903-10909 (1999)
- [58] P. Zhang, T.L. Haslett, C. Douketis and M. Moskovits, Phys. Rev. B **57**, 15513-15518 (1998).

- [59] D.P. Tsai, J. Kovacs, Z. Wang, M. Moskovits, V.M. Shalaev, J.S. Suh and R. Botet, Phys. Rev. Lett. **72**, 4149-4152 (1994).
- [60] B. Pettinger, G. Picardi, R. Schuster and G. Ertl, Electrochim. (Jpn) **68**, 942-949 (2000).
- [61] Bohren C.F. and Huffman D.R., *Absorption and Scattering of Light by Small Particles* (Wiley, New York, 1998)
- [62] Jackson J.D., *Classical Electrodynamics* (Wiley, New York, 1999)
- [63] J. Jersch, F. Demming, L.J. Hildenhagen, Appl. Phys. A **66**, 29-34 (1998).
- [64] P.I. Geshev, F. Demming, J. Jersch and K. Dickmann, Appl. Phys. B **70**, 91-97 (2000).
- [65] S. Klein, T. Witting, K. Dickmann, P. Geshev and M. Hietshold, Single Mol. **3**, 281-284 (2002).
- [66] F. Demming, J. Jersch, K. Dickmann and P.I. Geshev, Appl. Phys. B **66**, 593-598 (1998).
- [67] S. Klein, P. Geshev, T. Witting, K. Dickmann and m. Hietshold, Electrochemistry **3**, 281-284 (2002).
- [68] N. Hayazawa, Z. Sekkat, Y. Inouye and S. Kawata, J. Chem. Phys. **117**, 1296-1301 (2002).
- [69] Chen C.J., *Introduction to Scanning Tunneling Microscopy* (Oxford Press, New York, 1993)
- [70] J. Coombs, J.K. Gimzewski, B. Reihl, J.K. Sass and R.R. Schlittler, J. Microsc.**152**, 325 (1988).
- [71] S. Ushioda, J. Electr. Spectr. Rel. Phen.**109**, 169-181 (2000).
- [72] K. Ito, S. Ohyama, Y. Uehara and S. Ushioda, Surf. Science **324**, 282-288 (1995).

- [73] S. Ushioda, *Appl. Surf. Science* **113/114**, 335-342 (1997).
- [74] V. Sivel, R. Coratger, F. Ajustron and J. Beauvillain, *Phys. Rev. B* **45**, 8634-8637 (1992).
- [75] M.M.J. Bischoff, M.C.M.M. Van der Wielen and H. Van Kempen, *Surf. Science* **400**, 127-133 (1998).
- [76] M.J. Gallagher, S. Howells, L. Yi, T. Chen and D. Sadir, *Surf. Science* **278**, 270-280 (1992).
- [77] R. Pechou, R. Coratger, F. Ajustron and J. Beauvillain, *Surf. Science* **418**, 1-7 (1998).
- [78] R. Berndt, J.K. Gimzewski and P. Johansson, *Phys. Rev. Lett.* **67**, 3796-3799 (1991).
- [79] R. Berndt, J.K. Gimzewski and P. Johansson, *Phys. Rev. Lett.* **71**, 3493-3496 (1993).
- [80] R. Berndt, R. Gaisch, W.D. Schneider, J.K. Gimzewski, B. Reihl, R.R. Schlittler and M. Tschudy, *Phys. Rev. Lett.* **74**, 102-105 (1995).
- [81] M. Iwami, Y. Uehara and S. Ushioda, *Appl. Surf. Science* **169-170**, 188-192 (2001).
- [82] N. Nilius, N. Ernst and H.J. Freund, *Phys. Rev. Lett.* **84**, 3994-3997 (2000).
- [83] Y. Uehara, T. Fujita and S. Ushioda, *Phys. Rev. Lett.* **83**, 2445-2448 (1999).
- [84] K. Meguro, K. Sakamoto, R. Arafune, M. Satoh and S. Ushioda, *Phys. Rev. B* **65**, 165405 (2002).
- [85] I.I.Smolyaninov, V.S. Edelman and V.V. Zavyalov, *Phys. Lett. A* **158**, 337-340 (1991).
- [86] P. Johansson, R. Montreal and P. Apell, *Phys. Rev. B* **42**, 9210-9213 (1990).

- [87] P. Johansson, Phys. Rev. B **58**, 10823-10834 (1998).
- [88] R.W. Rendell and D.J. Scalapino, Phys. Rev. B **24**, 3276-3294 (1981).
- [89] J. Aizpurua, S.p. Apell and R. Berndt, Phys. Rev. B **62**, 2065-2073 (2000).
- [90] R.H. Ritchie, Surf. Science **34**, 34 (1973).
- [91] A. Downes and M.E. Welland, Phys. Rev. Lett. **81**, 1857-1860 (1998).
- [92] A. Downes and M.E. Welland, Phys. Rev. Lett. **72**, 2671-2673 (1998).
- [93] Y. Suzuki, H. Minoda and N. Yamamoto, Surf. Science **438**, 297-304 (1999).
- [94] X.H. Qiu, G.V. Nazin and W. Ho, Science **299**, 542-546 (2003).
- [95] K. Sakamoto, K. Meguro, R. Arafune, M. Satoh, Y. Uehara and S. Ushioda, Surf. Science **502-503**, 149-155 (2002).
- [96] W. Deng, d. Fujita, T. Ohgi, S. Yokoyama, K. Kamikado and S. Mashiko, J. Chem. Phys. **117**, 4995-5000 (2002).
- [97] G. Hoffmann, L. Libioulle and R. Berndt, Phys. Rev. B **65**, 212107 (2002).
- [98] P. Gao, D. Gosztola, L.H. Leung and M.J. Weaver, J. Electroanal. Chem. **68**, 942-949 (2000).
- [99] J.P. Ibe, P.P. Bey, D.P. DiLella and R.J. Colton, J. Vac. Sci. Technol. A **8**, 3570-3575 (1995).
- [100] L. Libioulle, Y. Houbion and J.M. Gilles, J. Vac. Sci. Technol. B **13**, 1325-1331 (1995).
- [101] K. Kneipp, Y. Wang, R.R. Dasari and S. Feld, Appl. Spectr. **49**, 780 (1995).
- [102] T.M. Cotton, J.H. Kim and G.D. Chumanov, J. Raman Spectr. **22**, 729-742 (1991).
- [103] R.J. Hinde, M.J. Sepaniak, R.N. Compton, J. Nordling and N. Lavrik, Chem. Phys. Lett. **339**, 167-173 (2001).

- [104] K. Kneipp, Y. Wang, H. Kneipp, L.T. Perelman, I. Itzkan, R.R. Dasari and M.S. Feld, Phys. Rev. Lett. **78**, 1667-16670 (1997).
- [105] T. Watanabe and B. Pettinger, Chem. Phys. Lett. **89**, 501 (1982).
- [106] D.A. Weitz, S. Garoff, J.I. Gersten, A. Nitzan, J. Chem. Phys. **78**, 5324 (1983).
- [107] T. Lemma and R.F. Aroca, J. Raman Spectr. **33**, 197-201 (2002).
- [108] A. Kudelski and J. Bukowska, Chem. Phys. Lett. **253**, 246-250 (1996).
- [109] N. Hayazawa, Z. Sekkat, Y. Inouye and S. Kawata, Opt. Comm. **183**, 333-336 (2000).
- [110] N. Hayazawa, Z. Sekkat, Y. Inouye and S. Kawata, Chem. Phys. Lett. **335**, 369-374 (2001).
- [111] N. Hayazawa, T. Alvarado, Y. Inouye and S. Kawata, J. Appl. Phys. **92**, 6983-6986 (2002).
- [112] C.A. Murray and S. Bodoff, J. Chem. Phys. **85**, 573-584 (1986).
- [113] M.R. Mahoney and R.P. Cooney, J. Chem. Soc. Faraday Trans. **81**, 2115-2122 (1985).
- [114] H. Baltruschat and J. Heitbaum, J. Electroanal. Chem. **157**, 319-326 (1983).
- [115] A. Otto, Surf. Science **75**, L392-L396 (1978).
- [116] K.U. Von Raben and R.K. Chang, Chem. Phys. Lett. **79**, 465-469 (1981).
- [117] A. Tadjeddine and A.L. Rille, Electrochim. Acta **45**, 601-609 (1999).
- [118] R.M. Stockle, Y.D. Suh, V. Deckert and R. Zenobi, Chem. Phys. Lett. **318**, 131-136 (2000).
- [119] M.S. Anderson, Appl. Phys. Lett. **76**, 3130-3132 (2000).

- [120] M.S. Anderson and W.T. Pike, Rev. Sci. Instr. **73**, 1198-1203 (2002).
- [121] L.T. Nieman, G.M. Krampert and R.E. Martinez, Rev. Sci. Instr. **72**, 1691-1699 (2001).
- [122] B. Pettinger, G. Picardi, R. Schuster and G. Ertl, Single Mol. **3**, 285-294 (2002).
- [123] B. Pettinger, G. Picardi, R. Schuster and G. Ertl, J. Electroan. Chem. in press.
- [124] A. Kudelski and B. Pettinger, Chem. Phys. Lett. **321**, 356-362 (2000).
- [125] P.J. Moyer, J. Schmidt, L.M. Eng, A.J. Meixner, G.W. Sandmann, H. Dietz and W. Plieth, J. Am. Chem. Soc. **122**, 5409-5410 (2000).
- [126] S. Nie and S.R. Emory, Science **275**, 1102 (1997).
- [127] J.C. Tsang, J.E. Demuth, P.N. Sanda and J.R. Kirtley, Chem. Phys. Lett. **76**, 54-57 (1980).
- [128] F. Tuinstra and J.L. Koenig, J. Chem Phys. **53**, 1126-1130 (1970).
- [129] R.J. Nemanich and S.A. Solin, Phys. Rev. B **20**, 392 (1979).
- [130] R. Al-Jishi and G. Dresselhaus, Phys. Rev. B **26**, 4514 (1982).
- [131] E.R. Savinova, D. Zemlyanov A. Scheybal, T. Schedel-Niedrig, K. Dobhlofer and R. Schlggl, Langmuir **15**, 6546 (1999).
- [132] I. Benjamin, D. Evans and A. Nitzan, J. Chem. Phys. **106**, 6647-6654 (1997).
- [133] S.C. Meepagala and F. Real, Phys. Rev.B **49**, 10761-10763 (1993).
- [134] W. Schmickler and D. Henderson, J. Electroan. Chem. **290**, 283-291 (1990).
- [135] R. Pechou, R. Coratger, F. Ajustron and J. Beauvillain, Appl. Phys. Lett. **72**, 671-673 (1998).

- [136] G. Hoffmann, R. Berndt and P. Johansson, Phys. Rev. Lett. **90**, 046803 (2003).
- [137] K. Meguro, K. Sakamoto, R. Arafune, M. Satoh and S. Ushioda, Phys. Rev. B **65**, 165405 (2002).
- [138] C. Sönnichsen, T. Franzl, T. Wilk, G. Von Plessen and J. Feldmann, Phys. Rev. Lett. **88**, 077402 (2002).
- [139] A. Bouhelier, M. Beversluis, A. Hartschuh and L. Novotny, Phys. Rev. Lett. **90**, 13903 (2003).