

## References

- 1 A. P. Li, F. Müller, A. Birner, K. Nielsch, and U. Gösele, J. of Appl. Phy., 84, (1998), 6023-6026, “Hexagonal pore arrays with a 50–420 nm interpore distance formed by self-organization in anodic alumina”.
- 2 A. P. Li,<sup>z</sup> F. Müller, and U. Gösele\*Electrochemical and Solid-State Letters, 3, (2000), 131-134,” Polycrystalline and Monocrystalline Pore Arrays with Large Interpore Distance in Anodic Alumina”
- 3 B. D. Yao and N. Wang\*, J. Phys. Chem. B, 105, (2001), 11395-11398, “Carbon Nanotube Arrays Prepared by MWCVD”.
- 4 Bethune, D. S., C. H. Kiang, M. S. de Vries, G. Gorman, R. Savoy, J. Vazquez, and R. Beyers, Nature, 363 (1993) 605-607”Cobalt-Catalysed growth of carbon nanotubes with single-atomic-layer wall”.
- 5 Bower, C., Z. Wei, J. Sungho, and Z. Otto, Appl. Phys. Lett., 77, (2000), 830-832 “Plasma-induced alignment of carbon nanotubes”.
- 6 By Eun Ju Bae, Won Bong Choi,\* Kwang Seok Jeong, Jae Uk Chu, Gyeong-Su Park, Seahn Song, and In Kyeong Yoo, Adv. Mater., 14, (2002), 277-279, “Selective Growth of Carbon Nanotubes on Pre-patterned Porous Anodic Aluminum Oxide”.
- 7 Chao Hsun Lin, Hui Lin Chang, Ming Her Tsai, Cheng Tzu Kuo, Diamond and Related Materials, 11, (2002), 922–926, “Growth mechanism and properties of the large area well-aligned carbon nano-structures deposited by microwave plasma electron cyclotron resonance chemical vapor deposition”.
- 8 Chen, P., X. Wu, J. Lin, K. Tan,, Science, 285 (1999), 91-93 “High H<sub>2</sub> Uptake by Alkali-Doped Carbon Nanotubes Under Ambient Pressure and Moderate Temperatures”.

- 9 Choi, W. B., D. S. Chung, J. H. Kang, H. Y. Kim, Y. W. Jin, I. T. Ha, Y. H. Lee, J. E. Jung, N. S. Lee, G. S. Park, and J. M. Kim, *Appl. Phys. Lett.*, 75, (1999), 3129-3131, “Fully sealed, high-brightness carbon-nanotube field-emission display”.
- 10 Dai, H., J. H. Hafner, A. G. Rinzler, D. T. Colber, and R. E. Smalley, *Nature*, 384 (1996), 147-150, ”Nanotubes as nanoprobes in scanning probe microscopy”.
- 11 Derycke, V., R. Martel, J. Appenzeller, and Ph. Avouris, *Nano Letter*, 1 (2001), 453-456 “Carbon Nanotube Inter- and Intramolecular Logic Gates”.
- 12 Dongsheng Xu, Guolin Guo, Linlin Gui, Youqi Tang, Zujin Shi, Zhaoxia Jin, Zhennan Gu, Weimin Liu, Xiulan Li, and Guanghua Zhang, *Appl. Phys. Lett.*, 75, (1999), 481-483, “Controlling growth and field emission property of aligned carbon nanotubes on porous silicon substrates”.
- 13 Dresselhaus, M. S., G. Dresselhaus, P. C. Eklund, *Science of Fullerenes and Carbon Nanotubes* (Academic Press, New York, 1996).
- 14 Eric W. Wong, Paul E. Sheehan, Charles M. Lieber, *Science*, 277, (1997), 1971-1975, “Nanobeam Mechanics: Elasticity, Strength, and Toughness of Nanorods and Nanotubes”.
- 15 F. Tuinstra and J. L. Koenic, *J. Chem. Phys.* 1970, 53, 1126.
- 16 Feiyue Li,<sup>†</sup> Lan Zhang,<sup>‡</sup> and Robert M. Metzger\*, *Chem. Mater.*, 10, (1998), 2470-2480, “On the Growth of Highly Ordered Pores in Anodized Aluminum Oxide”.
- 17 G. Sauer, G. Brehm, and S. Schneider, *J. of Appl. Phy.*, 91, (2002), 3243-3247,” Highly ordered monocrystalline silver nanowire arrays”

- 18 G. Z. Yue, Q. Qiu, Bo Gao Y. Cheng, J. Zhang, H. Shimoda, S. Chang, J. P. Lu and O. Zhou, Appl. Phys. Lett., 81, (2002), 355-357, “Generation of continuous and pulsed diagnostic imaging x-ray radiation using a carbon-nanotube-based field-emission cathode”.
- 19 Guo, T., P. Nikolaev, A. Thess, D. T. Colbert, and R. E. Smalley, Chem. Phys. Lett., 243 (1995) 49-54, “Catalytic Growth of Single-walled Nanotubes by Laser Vaporization”.
- 20 H. Masuda and K. Fukuda, Science 268 (1995) 1466
- 21 H.W. Kroto, J.R. Heath, S.C. O’Brien, R.F. Curl & R.E. Smalley, Nature, 318, (1985), 162-163, “C<sub>60</sub>:Buckminsterfullerene”
- 22 Han Gao, Cheng Mu, Fan Wang, Dongsheng Xu, Kai Wu, Youchang Xie, Shuang Liu, Enge Wang, Jun Xu and Dapeng Yu, J. of Appl. Phy., 92, (2003), 5602-5605, “Field emission of large-area and graphitized carbon nanotube array on anodic aluminum oxide template”.
- 23 Hideki Masuda and Masahiro Satoh, Jpn. J. Appl. Phys., 35, (1996), L126-L129, “Fabrication of Gold Nanodot Array Using Anodic Porous Alumina as an Evaporation Mask”.
- 24 Hideki Masuda, Kouichi Yada, Atsushi Osaka, Jpn. J. Appl. Phys., 37, (1998), L1340-L1342, “Self-Ordering of cell configuration of anodic porous alumina with large-size pores in phosphoric acid solution”
- 25 Iijima, S., Nature, 354 (1991) 56-58, ”Helical microtubules of graphitic carbon”
- 26 J. Li, C. Papadopoulos, and J. M. Xu, M. Moskovits, Appl. Phy. Lett., 75, (1999), 367-369, “Highly-ordered carbon nanotube arrays for electronics applications”.

- 27 Jeroen W. G. Wildoer\*, Liesbeth C. Venema\*, Andrew G. Rinzler†, Richard E. Smalley† & Cees Dekker\*, Nature, 391, (1998), 59-62, “Electronic structure of atomically resolved carbon nanotubes”.
- 28 Jin Seung Lee, Geun Hoi Gu, Hoseong Kim, Kwang Seok Jeong, Jiwon Bae, and Jung Sang Suh\*, Chem. Mater. 13, (2001), 2387-2391, “Growth of Carbon Nanotubes on Anodic Aluminum Oxide Templates: Fabrication of a Tube-in-Tube and Linearly Joined Tube”.
- 29 Z. H. Yuan, H. Huang, H. Y. Dang, J. E. Cao, B. H. Hu, and S. S. Fan, Appl. Phys. Lett., 78, (2001), 3127-3129, “Field emission property of highly ordered monodispersed carbon nanotube arrays”.
- 30 Jung Sang Suh and Jin Seung Lee, Appl. Phy. Lett., 75, (1999), 2047-2049, “Highly ordered two-dimensional carbon nanotube arrays”.
- 31 L. Nilsson O. Groening, C. Emmenegger, O. Kuettel, E. Schaller, and L. Schlapbach, H. Kind, J-M. Bonard, and K. Kern, Appl. Phy. Lett., 76, (2000), 2071-2073, “Scanning field emission from patterned carbon nanotube films”.
- 32 Jung Sang Suh,a) Kwang Seok Jeong, Jin Seung Lee, and Intaeck Han, Appl. Phys. Lett., 80, (2002), 2392-2394, “Study of the field-screening effect of highly ordered carbon nanotube arrays”.
- 33 K. B. K. Teo, M. Chhowalla, G. A. J. Amaratunga, W. I. Milne, G. Pirio, P. Legagneux, F. Wyczisk, J. Olivier, and D. Pribat, J. Vac. Sci. Technol. B , 20, (2002), 116-121, “Characterization of plasma-enhanced chemical vapor deposition carbon nanotubes by Auger electron spectroscopy”.
- 34 Lee, C. J., and J. Park, Appl. Phys. Lett., 77 (2000) 3397-3399, ”Growth model of bamboo-shaped carbon nanotubes by thermal chemical vapor deposition”.

- 35 Liu, C., Y. Y. Fan, M. Lu, H. T. Cong, H. M. Cheng, M. S. Dresselhaus, Science, 286 (1999), 1127-1129 “Hydrogen Storage in Single-Walled Carbon Nanotubes at Room Temperature”.
- 36 Lohrengel, M. M. Mater. Sci. Eng. 1993, R11, 243
- 37 Michael P. Zach and Reginald M. Penner\*, Adv. Mat., 12, (2002), 878-883, “Nanocrystalline Nickel Nanoparticles”.
- 38 Noriaki Hamada, Shin-ichi Sawada, and Atsushi Oshiyama, Phy. Rev. Letters, 68, (1992), 1579-1581, “New One-dimensional Conductors: Graphitic Microtubules”.
- 39 O. Groening, O. M. Küttel, Ch. Emmenegger, P. Groening,a) and L. Schlapbach, J. Vac. Sci. Technol. B, 18, (2000), 665-678, “Field emission properties of carbon nanotubes”.
- 40 O. Jessensky, F. Müller, and U. Goensele, Appl. Phys. Lett., 72, (1998), 1173-1175, “Self-organized formation of hexagonal pore arrays in anodic alumina”.
- 41 Olivier M. Küttel, Oliver Groening, Christoph Emmenegger, and Louis Schlapbach, Appl. Phys. Lett., 73, (1998), 2113-2115, “Electron field emission from phase pure nanotube films grown in a methane/hydrogen plasma”.
- 42 P. G. Lurie and J. M. Wilson, Surf. Sci. 1977, 65, 476.
- 43 Po-Lin Chen, Cheng-Tzu Kuo, Fu-Ming Pan and Tzeng-Guang Tsai, Appl. Phys. Lett., 84, (2004), 3888-3890, “Preparation and phase transformation of highly ordered TiO<sub>2</sub> nanodot arrays on sapphire substrates”.
- 44 R. Saito, M. Fujita, G. Dresselhaus, and M. S Dresselhaus, Appl. Phys. Lett., 60, (1992), 2204-2206, “Electronic structure of chiral graphene tubules”.

- 45 R. T. K. Baker, Carbon 27 (1989) 315
- 46 S. L. Sung, S. H. Tsai, C. H. Tseng, F. K. Chiang, X. W. Liu, and H. C. Shih, Appl. Phys. Lett., 74, (1999), 197-199, “Well-aligned carbon nitride nanotubes synthesized in anodic alumina by electron cyclotron resonance chemical vapor deposition”.
- 47 Saito, Y., S. Uemura, and K. Hamaguchi, Jpn. J. Appl. Phys., 37 (1998) L346-348, “Cathode Ray Tube Lighting Elements with Carbon Nanotube Field Emitters”.
- 48 Sander, J. Tans, A. R. M. Verschueren, and C. Dekker, Nature, 393 (1998), 49-52, “Room-temperature transistor based on a single carbon nanotube”.
- 49 Shimizu, K.; Kobayashi, K.; Thompson, G. E.; Wood, G. C. Philos. Mag. 1992, A66, 643.
- 50 Y. Shiratori, H. Hiraoka, Y. Takeuchi, S. Itoh, and M. Yamamoto, Appl. Phys. Lett., 82, (2003), 2485-2487, “One-Step formation of aligned carbon nanotubes field emitter at 400°C”.
- 51 Soo-Hwan Jeong, Hee-Young Hwang, Kun-Hong Lee, and Yongsoo Jeong, Appl. Phys. Lett., 78, (2001), 2052-2054, “Template-based carbon nanotubes and their application to a field emitter”.
- 52 Soo-Hwan Jeong, Ok-Joo Lee, and Kun-Hong Lee, Sang Ho Oh and Chan-Gyung Park, Chem. Mater., 14, (2002), 1859-1862, “Preparation of Aligned Carbon Nanotubes with Prescribed Dimensions: Template Synthesis and Sonication Cutting Approach”.
- 53 Soo-Hwan Jeong,<sup>†</sup> Ok-Joo Lee,<sup>†</sup> Kun-Hong Lee,<sup>\*,†</sup> Sang-Ho Oh,<sup>‡</sup> and Chan-Gyung Park<sup>‡</sup>, Chem. Of Mat., 14, (2002), 4003-4005, “Packing Density Control of Aligned Carbon Nanotubes”.

- 54 Spindt, C. A., I. Bride, L. Humprey and E. R. Westerberg, ,J. Appl. Phys., 47, (1976), 5248, “ Physical properties of thin-film field emission cathodes molybdenum cones”
- 55 Sunil Kumar Thamida and Hsueh-Chia Chang, CHAOS, 12, (2002), 240-251, “Nanoscale pore formation dynamics during aluminum anodization”.
- 56 Takashi Kyotani,\* Li-fu Tsai, and Akira Tomita, Chem. Mater., 8, (1996), 2109-2113, “Preparation of Ultrafine Carbon Tubes in Nanochannels of an Anodic Aluminum Oxide Film”.
- 57 Tatsuya Iwasaki, Taiko Motoi, and Tohru Den, Appl. Phys. Lett., 75, (1999), 2044-2046, “Multiwalled carbon nanotubes growth in anodic alumina nanoholes”.
- 58 Teri Wang Odom\*, Jin-Lin Huang\*, Philip Kim† & Charles M. Lieber\*†, Nature, 391, (1998), 62-64, “Atomic structure and electronic properties of single-walled carbon nanotubes“.
- 59 Thanh N. Truong, J. Chem. Phys., 100, (1994), 8014, “A direct ab initio dynamics approach for calculating thermal rate constants using variational transition state theory and multidimensional semiclassical tunneling methods. An application to the  $\text{CH}_4 + \text{H} \rightarrow \text{CH}_3 + \text{H}_2$  reaction”.
- 60 Thompson, G. E.; Wood, G. C. Anodic Films on Aluminium. In Treatise on Materials Science and Technology, Vol. 23: Corrosion: Aqueous Process and Passive Films; Scully, J. C., Ed.; Academic Press Inc.: New York, 1983; Chapter 5, pp 205-329.
- 61 Tsai, S. H., C. W. Chao, C. L. Lee and H. C. Shih, Appl. Phys. Lett., 74 (1999), 3462-3464 “Bias-enhanced nucleation and growth of the aligned carbon nanotubes with open ends under microwave plasma synthesis”.

- 62 Tu. K.; Mayer, J. W.;Feldman, L. C. Electronic Thin Film Science for Electrical Engineers and Materials Scientists ; Macmillan Publishing Comp. : New York, 1992; p370.
- 63 Vladimir I. Merkulov,a) Michael A. Guillorn, Douglas H. Lowndes, Michael L. Simpson, and Edgar Voelkl, Appl. Phys. Lett., 79, (2001), 1178-1180, “Shaping carbon nanostructures by controlling the synthesis process”.
- 64 Wong, S. S., E. Joselevich, A. T. Woolley, C. L. Cheung, C. M. Lieber, Nature, 394 (1998), 52-55 “Covalently functionalized nanotubes as nanometre-sized probes in chemistry and biology”.
- 65 Y. C. Sui,,†,§ D. R. Acosta,‡ J. A. González-León,† A. Bermúdez,† J. Feuchtwanger,† B. Z. Cui,† J. O. Flores,† and J. M. Saniger†, J. Phys. Chem. B, 105(2001),, 1523-1527, “Structure, Thermal Stability, and Deformation of Multibranched Carbon Nanotubes Synthesized by CVD in the AAO Template”.
- 66 Y. Tu, Z. P. Huang, D. Z. Wang, J. G. Wen, and Z. F. Ren,, Appl. Phys. Lett., 80, (2002), 4018-4020, “Growth of aligned carbon nanotubes with controlled site density”.
- 67 R. T. K. Baker and P. S. Harris, in Chemistry and Physics of Carbon, edited by P. L. Walker and P. A. Thrower ~Marcel Dekker, New York, (1978), Vol. 14.
- 68 Yeon Sik Jung, Duk Young Jeon, Applied Surface Science, 193, (2002), 129–137, “Surface structure and field emission property of carbon nanotubes grown by radio-frequency plasma-enhanced chemical vapor deposition”.

- 69 Young Chul Choi, Dong Jae Bae, Young Hee Lee, Byung Soo Lee, Gyeong-Su Park, Won Bong Choi, Nae Sung Lee, and Jong Min Kim, J. Vac. Sci. Technol. A, 18, (2000), 1864-1868, "Growth of carbon nanotubes by microwave plasma-enhanced chemical vapor deposition at low temperature".
- 70 Yu, M, O. Lourie, M. Dyer, K. Mooni, T. Kelly, R. S. Ruoff, Science, 287 (2000), 637-640 "Strength and Breaking Mechanism of Multiwalled Carbon Nanotubes Under Tensile Load".
- 71 Yun Sung Woo Duk Young Jeon, In Taek Han, Young Jun Park, Ha Jin Kim, Jae Eun Jung, Jong Min Kim, Nae Sung Lee, J. of Appl. Phy., 94, (2003), 6789-6795, "Structural characteristics of carbon nanorods and nanotubes grown using electron cyclotron resonance chemical vapor deposition".
- 72 Yun-Hi Lee,\* Yoon-Taek Jang, Dong-Ho Kim, Jin-Ho Ahn, and Byeong-kwon Ju, 13, (2001), 479-482, "Realization of Gated Field Emitters for Electrophotonic Applications Using Carbon Nanotube Line Emitters Directly Grown into Submicrometer Holes".
- 73 Z. F. Ren, Z. P. Huang, D. Z. Wang, J. G. Wen, J. W. Xu, J. H. Wang, L. E. Calvet, J. Chen, J. F. Klemic, and M. A. Reed, Appl. Phys. Lett., 75, (1999), 1086-1088, "Growth of a single freestanding multiwall carbon nanotubes on each nanonickel dot".
- 74 Z. W. Pan, S. S. Xie,a) L. Lu, B. H. Chang, L. F. Sun, W. Y. Zhou, G. Wang, and D. L. Zhang, Appl. Phys. Lett., 74, (1999), 3152-3154, "Tensile tests of ropes of very long aligned multiwall carbon nanotubes".