

CATALYTIC EFFECT OF FORMATION OF A WEB-LIKE CARBON NANOSTRUCTURES

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ABSTRACT

Carbon nanotubes have small dimensions, high strength and the remarkable physical and electrical properties. These make them very unique materials with a whole range of promising applications. Carbon nanotubes were formed by laser ablation using a graphite target containing Ni and Co catalysts, each with weight percentage of 10%. The Nd:YAG laser with 532 nm wavelength, 10.54 W power was used to ablate the target to form the carbon nanotubes. The pressure inside the chamber was kept at 4Torr. Web-liked carbon nanotubes were formed on the substrate after 30 minutes of laser ablation. The SEM images showed that the diameter of the carbon nanotubes formed using Ni and Co catalysts were between 50-150 nm in size.

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REFERENCES

- [1]. Yudasaka, M. Komatsu, T. Ichihashi and T. Iijima, S (1997); *Chemical Physics Letter*. 278,102.
- [2]. Ju, Y., Li, F.Y and Wei, R. Z (2005); *J. Serb. Chem. Soc.* 70 (2), 277.
- [3]. Cao A., Xu A., Ji L., Wu D and Wei B (2001).*Chemical Physics Letter*, 344,13.
- [4]. Yudasaka, M. Kasuya, Y. Kokai, F. Takahashi, K. Takizawa, M. Bandow, S. Iijima, S (2002); *Applied Physics A.* 74, 377.
- [5]. Park, J.B. Choi, G.S. Cho, Y.S. Hong, S.Y. Kim, D. Choi, S.Y. Lee, J.H and Cho, K.I (2002); *Crystal Growth.* 244, 211.
- [6]. Yudasaka, M. Yamada, R. Sensui, N. Wilkins, T. Ichihashi, T and Iijima, S (1999); *Physical Chemistry B.* 103,6224.
- [7]. S. Iijima, *Nature* 354 (1991), p. 56.
- [8]. T.W. Ebbesen and P.M. Ajayan, *Nature* 358 (1992), p. 220
- [9]. S. Amelinckx, X.B. Zhang, D. Bernaerts, X.F. Zhang, V. Joanov and J.B. Nagy, *Science* 265 (1994), p. 635
- [10]. E.W. Wong, P.E. Sheehan and C.M. Lieber, *Science* 277 (1997), p. 1971

- [11]. M. Ouyang, J.-L. Huang and C.M. Lieber, *Acc. Chem. Res.* 35 (2002), p. 1018 [12].
C.D.
Scott, S. Arepalli, P. Nikolaev and R.E. Smalley. *Appl. Phys. A* 72
(2001), pp. 573–580
- [13]. M. Yudasaka, T. Komatsu, T. Ichihashi, Y. Achiba and S. Iijima. *J. Phys.*
Chem. B 102 (1998), p. 4892
- [14]. D. Nishide, H. Kataura, S. Suzuki, K. Tsukagoshi, Y. Aoyagi and Y. Achiba.
Chem. Phys. Lett. 372 (2003), pp. 45–50
- [15]. Y. Suda, K. Utaka, M.A. Bratescu, Y. Sakai, J. Tsujina and K. Suzuki, *Appl.*
Phys. A 79 (2004), pp. 1331–1333
Phys. A 79 (2004), pp. 1331–1333