560.
标题: Characteristics of a New Carbon Nanotube Antenna Structure With Enhanced Radiation in the Sub-Terahertz Range
作者: Mahmoudand, SF (Mahmoudand, Samir F.); AlAjmi, AR (AlAjmi, Ayed R.)
来源出版物: IEEE TRANSACTIONS ON NANOTECHNOLOGY 卷: 11 期: 3 页: 640-646
DOI: 10.1109/TNANO.2012.2190752 出版年: MAY 2012
在 Web of Science 中的被引频次: 0
被引频次合计: 0
引用的参考文献数: 21
摘要: In this paper, a new antenna configuration is proposed to operate efficiently in the sub-terahertz frequency range (10-1000 GHz). The proposed antenna is composed of a bundle of single-walled carbon nanotubes (SWCNTs) surrounded by two dielectric jackets; the inner of which is dielectric foam with relative permittivity close to unity. The outer one is a metamaterial layer with permittivity much smaller than the free-space permittivity. Rigorous analysis shows that the metamaterial layer helps to reduce the axial propagation constant of the surface wavemode traveling along the antenna. The radiation resistance and the radiation efficiency of a resonant dipole antenna are derived. Numerical results show that these parameters are considerably enhanced at the sub-terahertz frequencies relative to the SWCNT bundle antenna.
入藏号: WOS:000303894600030
语种: English
文献类型: Article
作者关键词: Antenna; carbon nanotubes; metamaterial; terahertz antenna
KeyWords Plus: DIPOLE ANTENNAS; PERFORMANCE; CONDUCTIVITY; SCATTERING; LIMIT; MODEL
地址: [Mahmoudand, Samir F.] Kuwait Univ, Dept Elect Engn, Safat 13060, Kuwait
[AlAjmi, Ayed R.] Publ Author Appl Educ & Training, Coll Technol Studies, Shuwaikh 70654, Kuwait
通讯作者地址: Mahmoudand, SF (通讯作者),Kuwait Univ, Dept Elect Engn, Safat 13060, Kuwait
电子邮件地址: samirfm2000@yahoo.com; arr.alajmi@paaet.edu.kw
出版商: IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC
出版商地址: 445 HOES LANE, PISCATAWAY, NJ 08855-4141 USA
Web of Science 分类: Engineering, Electrical & Electronic; Nanoscience & Nanotechnology; Materials Science, Multidisciplinary; Physics, Applied
学科类别: Engineering; Science & Technology - Other Topics; Materials Science; Physics
IDS 号: 940MV
ISSN: 1536-125X
29 字符的来源出版物名称缩写: IEEE T NANOTECHNOL
ISO 来源出版物缩写: IEEE Trans. Nanotechnol.
来源出版物页码计数: 7