宁波市科学技术奖公示信息表（单位提名）

提名奖项：宁波市科技进步奖

|  |  |
| --- | --- |
| 成果名称 | CVD单晶金刚石的产业化制备关键技术 |
| 提名等级 | 一等奖 |
| **提名书****相关内容** | 论文：1. Highly flexible cellulose nanofiber/single-crystal nanodiamond flake heat spreader films for heat dissipation / Gong, P (Gong, Ping); Li, LH (Li, Linhong); Fu, GE (Fu, Guang-en); Shu, SC (Shu, Shengcheng); Li, MH (Li, Maohua); Wang, YD (Wang, Yandong); Qin, Y (Qin, Yue); Kong, XD (Kong, Xiangdong); Chen, HY (Chen, Huanyi); Jiao, CC (Jiao, Chengcheng); Ruan, XX (Ruan, Xinxin); Cai, T (Cai, Tao); Dai, W (Dai, Wen); Yan, C (Yan, Chao); Nishimura, K (Nishimura, Kazuhito); Lin, CT (Lin, Cheng-Te); Jiang, N (Jiang, Nan); Yu, JH (Yu, Jinhong) / JOURNAL OF MATERIALS CHEMISTRY C 10(33): 12070-12079 / AUG 25 20222. Optical Properties of Bulk Single-Crystal Diamonds at 80-1200 K by Vibrational Spectroscopic Methods / Shi, ZT (Shi, Zitao); Yuan, QL (Yuan, Qilong); Wang, YZ (Wang, Yuezhong); Nishimura, K (Nishimura, Kazuhito); Yang, GJ (Yang, Guojian); Zhang, BX (Zhang, Bingxue); Jiang, N (Jiang, Nan); Li, H (Li, He) / MATERIALS 14(23): 7435 / DEC 2021 3. Efficient monolithic diamond Raman yellow laser at 572.5 nm / Tu, H (Tu, Heng); Ma, SH (Ma, Shihui); Hu, ZG (Hu, Zhanggui); Jiang, N (Jiang, Nan); Shen, Y (Shen, Yu); Zong, N (Zong, Nan); Yi, J (Yi, Jian); Yuan, QL (Yuan, Qilong); Wang, XY (Wang, Xiaoyang); Wang, JY (Wang, Jiyang) / OPTICAL MATERIALS 114): 110912 / APR 2021 4. Efficient Raman red laser with second-order stokes effect of diamond crystal / Ma, SH (Ma, Shihui); Tu, H (Tu, Heng); Lu, DZ (Lu, Dazhi); Hu, ZG (Hu, Zhanggui); Jiang, N (Jiang, Nan); Wang, XY (Wang, Xiaoyang); Wang, JY (Wang, Jiyang) / OPTICS COMMUNICATIONS 478: 126399 / JAN 1 2021 5. A Diamond Temperature Sensor Based on the Energy Level Shift of Nitrogen-Vacancy Color Centers / Yang, MY (Yang, Mingyang); Yuan, QL (Yuan, Qilong); Gao, JY (Gao, Jingyao); Shu, SC (Shu, Shengcheng); Chen, FY (Chen, Feiyue); Sun, HF (Sun, Huifang); Nishimura, K (Nishimura, Kazuhito); Wang, SL (Wang, Shaolong); Yi, J (Yi, Jian); Lin, CT (Lin, Cheng-Te); Jiang, N (Jiang, Nan) / NANOMATERIALS 9(11): 1576 / NOV 2019 6. Single-Step Formation of Ni Nanoparticle-Modified Graphene-Diamond Hybrid Electrodes for Electrochemical Glucose Detection / Cui, NY (Cui, Naiyuan); Guo, P (Guo, Pei); Yuan, QL (Yuan, Qilong); Ye, C (Ye, Chen); Yang, MY (Yang, Mingyang); Yang, MH (Yang, Minghui); Chee, KWA (Chee, Kuan W. A.); Wang, F (Wang, Fei); Fu, L (Fu, Li); Wei, QP (Wei, Qiuping); Lin, CT (Lin, Cheng-Te); Gao, JY (Gao, Jingyao) / SENSORS 19(13): 2979 / JUL 1 2019 7. Synthesis of multiple single crystal diamonds by DC-GD-CVD / Lyu, JL (Lyu, Ji-lei); Wang, SL (Wang, Shao-long); Wang, B (Wang, Bo); Nishimura, K (Nishimura, Kazhihito); Jiang, N (Jiang, Nan) / SURFACE ENGINEERING 35(1): 91-95 / JAN 2 2019 8. Highly stable and regenerative graphene-diamond hybrid electrochemical biosensor for fouling target dopamine detection / Yuan, QL (Yuan, Qilong); Liu, Y (Liu, Ying); Ye, C (Ye, Chen); Sun, HY (Sun, Hongyan); Dai, D (Dai, Dan); Wei, QP (Wei, Qiuping); Lai, GS (Lai, Guosong); Wu, TZ (Wu, Tianzhun); Yu, AM (Yu, Aimin); Fu, L (Fu, Li); Chee, KWA (Chee, Kuan W. A.); Lin, CT (Lin, Cheng-Te) / BIOSENSORS & BIOELECTRONICS 111: 117-123 / JUL 15 2018 9. 胡付生,杨明阳,袁其龙,林正得,江 南 金刚石表面沟槽的横向拼接生长研究 硬质合金 第37卷第2期10．陈梦唤，易 剑，满卫东，江 南 单晶-多晶金刚石的拼接工艺研究 陶瓷学报 第41卷第5期 2020专利：1. 201910434088.0一种单晶金刚石激光打标生长方法2. 201410854411.7一种制备表面镀层厚度受控的金刚石的方法及使用该方法制得的产品3. 201410855036.8一种制备表面镀层厚度减薄的金刚石的方法4. 201310677037.3一种金刚石工具及其制备方法5. 201910218603.1探测介质及其制备方法、金刚石探测器6. 201710495046.9一种金刚石辐射探测器及其制备方法7. 201410200675.0 感应钎焊装置8. 201310676339.9一种金刚石复合体及其制备方法9. 201310077506.8一种金刚石复合体及其制备方法10. 201310042004.1金刚石-纳米线复合体及其制备方法 |
| **主要完成人** | 江南、张军安、李赫、张天翊、易剑、胡付生、张冠群、袁其龙、褚伍波、杨科、杨国永、王琦、张军恒 |
| **主要完成单位** | 宁波晶钻科技股份有限公司、中国科学院宁波材料技术与工程研究所、宁波晶钻新材料科技有限公司 |
| 提名单位 | 镇海区科技局 |
| 提名意见 | 该成果通过创新性设计解决了金刚石微波等离子体化学气相沉积（MPCVD）装备国产化问题，大幅度降低了MPCVD装备的成本，开发出具有自主知识产权的CVD单晶金刚石产业化制备工艺，完成了CVD单晶金刚石材料和相关产品的工业化应用探索，突破了发达国家在高端CVD金刚石材料及制品对我国的技术封锁，建立了国内首条CVD单晶金刚石生产线，制备的单晶金刚石尺寸＞20x20mm2，氮杂质浓度＜100ppb，热导率＞2000W/m.K，实现单晶金刚石精密加工刀具轮廓线优于30nm。提名该项目为市科学技术进步奖 一 等奖。 |