

# 项目公示材料

**项目名称：**空间环境原子氧模拟装备及防护技术和应用

**提名者：**江西科技师范大学

**提名等级：**中国腐蚀与防护学会科学技术奖，一等奖

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**主要知识产权目录如下：**

序号	国家/地区	申请号	授权专利号	专利名称
1	中国	200310119054.1	ZL200310119054.1	抗原子氧侵蚀的有机硅/二氧化硅杂化涂层及制备方法与应用
2	中国	200610047021.4	ZL200610047021.4	一种模拟近地轨道空间复合环境方法及所用装置
3	中国	201210010995.0	ZL201210010995.0	一种可紫外固化的耐高温、耐腐蚀的有机硅/二氧化硅杂化涂层的制备方法
4	中国	201310094081.1	ZL201310094081.1	一种耐高温、耐腐蚀含氟有机硅/SiO <sub>2</sub> 纳米杂化涂层的制备方法
5	中国	201310094599.5	ZL201310094599.5	一种超临界干燥的耐高温、防腐蚀有机硅/氧化铝纳米杂化涂层的制备方法

序号	论文名称	刊名	年，卷，期，页
1	Investigation of surface reaction and degradation mechanism of Kapton during atomic oxygen exposure	J. Materials Science & Technology	2003,19(6): 535-539,
2	A simulator for producing of high flux atomic oxygen beam by using ECR plasma source,	J. Materials Science & Technology	2004,20(6): 759-762,

3	利用镍催化型探测器测量原子氧密度	金属学报	2004,8:791-794
4	原子氧环境中聚酰亚胺的质量变化和侵蚀机制	材料研究学报	2005,19(4):337-342,
5	银在原子氧环境中的氧化	稀有金属材料与工程	2006,35:1057-1060,
6	Resistance of Polyimide/Silica Hybrid Films to Atomic Oxygen Attack,	Surface & Coating Technology	2006,200:6671-6677.
7	Effect of Ion Implantation upon Erosion Resistance of Polyimide Films in Space Environment	Trans. Nonferrous Met. Soc. China	2006,16:s661-s664.
8	Ground-based investigations of atomic oxygen erosion behaviors of silver and ion-implanted silver,	Chinese Journal of Aeronautics	2006,16:s252-256
9	溶胶-凝胶制备的 Al <sub>2</sub> O <sub>3</sub> 涂层抗原子氧侵蚀性能研究	稀有金属材料与工程	2007,36:s735-738
10	Polydimethylsiloxane/Silica Hybrid Coatings Protecting Kapton from Atomic Oxygen Attack	Materials Chemistry and Physics	2008, 112:1093-1098.
11	溶胶-凝胶制备的 Al <sub>2</sub> O <sub>3</sub> -SiO <sub>2</sub> 复合陶瓷涂层抗原子氧侵蚀性能研究	稀有金属材料与工程,	2009, 38:743-746.
12	空间原子氧环境对航天器表面侵蚀效应及防护技术	航天器环境工程	2009,26 (1) : 1-4
13	Atomic Oxygen Erosion Resistance of Siloxane/Silica Hybrid Coatings in Space Environment	Rare Metal Materials and Engineering	2011,40: 488-491 SCI
14	Erosion Effects of Atomic Oxygen on Polyhedral Oligomeric Silsesquioxane-Polyimide Hybrid Films in Low Earth Orbit Space Environment	Rare Metal Materials and Engineering	2013: 13,2: 1356-1359,
15	Surface modification of POSS-polyimide hybrid films by atomic oxygen using ECR plasma	Journal of Nanoscience and Nanotechnology	2013,307: 324-327,
16	Atomic oxygen erosion resistance of polysiloxane/POSS hybrid coatings on Kapton	Nuclear Instruments & Methods In Physics Research B	2013,50: 337-342

17	Protection of kapton from atomic-oxygen erosion using a polysilazane coating	Physics Procedia,	2014,651-653:65-68
18	Effect of Vacuum Ultraviolet Radiation on Atomic Oxygen Erosion of Polysiloxane/SiO <sub>2</sub> hybrid coatings.	Applied Mechanics and Materials	2009 (4):483-488,
19	A Polysilazane Coating Protecting Polyimide from Atomic Oxygen and Vacuum Ultraviolet Radiation Erosion.	J. Mater. Sci. Technol.	2009(203): 3338-3343.
20	Vacuum Ultraviolet/Atomic Oxygen Erosion Resistance of Amorphous Si <sub>0.26</sub> C <sub>0.43</sub> N <sub>0.31</sub> Coating	Surf. Coat. Technol.	2011,48(3):507
21	Perhydropolysilazane derived silica coating protecting Kapton from atomic oxygen attack	Journal of Spacecraft and Rockets	2011,520:1063–1068,
22	Studies on atomic oxygen erosion of deposited Mg-alloy coating on Kapton	Thin Solid Films	2017,124: 56-62,SCI
23	An AZ31 magnesium alloy coating for protecting polyimide from erosion-corrosion by atomic oxygen	Corrosion Science	2018,138:170-177,SCI I
24	铜基体上抗原子氧侵蚀的 Al <sub>2</sub> O <sub>3</sub> 涂层	Corrosion Science	2003,13:172-176
25	Kapton 抗原子氧侵蚀的 Al <sub>2</sub> O <sub>3</sub> 涂层研究	中国有色金属学报	2002,23(4):68-72
26	低地轨道环境中的原子氧对空间材料的侵蚀与防护涂层	宇航学报	2002, 14(3):152-156.
27	空间材料的原子氧侵蚀理论和预测模型	腐蚀科学与防护技术	2003, 17 (2) :113-121
28	原子氧/紫外综合环境模拟实验与防护技术	材料研究学报	2006, 26 (4):263-267