

氟化石墨烯 Fluorographene

产品综述 Product summary

氟化石墨烯是一种重要的新型石墨烯衍生物。氟化石墨烯与石墨烯相比，虽然碳原子的杂化方式由 sp^2 转变为 sp^3 ，但同时也保留了石墨烯的片层结构。因此，氟化石墨烯不但具有石墨烯一般大的比表面积，同时由于氟原子的引入极大地降低了石墨烯表面能，极大地增强了疏水疏油性，提高了热稳定性、化学稳定性及抗腐蚀能力。氟化石墨烯的这些独特性能使其可广泛应用于抗磨润滑、耐高温腐蚀涂层等，同时由于氟化石墨烯的较长带隙宽使其在纳米电子器件、光电子器件以及热电装置等领域具有潜在的应用前景。此外，由于氟化石墨烯基氟碳材料具有发达的比表面和孔结构，且氟含量的不同对能带结构具有可调节性，导致其具有独特的导电性能，用于锂一次电池正极材料时具有与电解液接触界面大、锂离子扩散速度快等特点，用氟化石墨烯做正极材料的锂原电池具有能量密度高、放电平台高且平稳、使用温度范围宽、存储寿命极长等优点，在航空航天和高端民用领域有极大的应用潜力。

Fluorographene is an important graphene derivative. Compared with graphene, fluorographene retained the lamellar structure of graphene although the carbon atoms were hybridized from sp^2 to sp^3 . As a result, fluorographene has not only large specific surface area, at the same time due to the introduction of fluorine atoms, the surface energy of graphene was greatly reduced, the property for hydrophobic and oleophobic was greatly enhanced, while the thermal stability, chemical stability and corrosion resistance were largely improved. Due to its unique properties, fluorographene can be widely used in the fields of anti-wear lubrication, high temperature corrosion resistant coating, at the same time, due to its wider bandgap, fluorographene has potential applications prospect in nano-electronic devices, photoelectronic devices, thermoelectric devices and other fields. In addition, because the fluorocarbon materials have fairly developed specific surface and pore structure and unique conductivity, the lithium primary batteries will have large contact interface with electrolyte and fast lithium ion diffusion speed, when fluorographene used as cathode material of lithium batteries. These lithium primary batteries have the advantages of high energy density, high discharge voltage, stable discharge curve, wide operating temperature, extremely long shelf life, which has great application potential in the aerospace and high-end civil field.

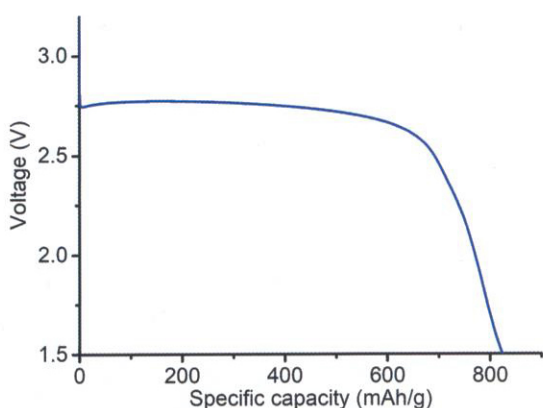


产品名 Product name	纯度 Purity	氟含量 Fcontent	粒径 (D50) Particle size	层数 Layers	振实密度 Tap density
氟化石墨烯 Fluorographene	≥ 99%	45-65 wt. %	≤ 20 μm	≤ 15	≥ 0.2g/cm ³

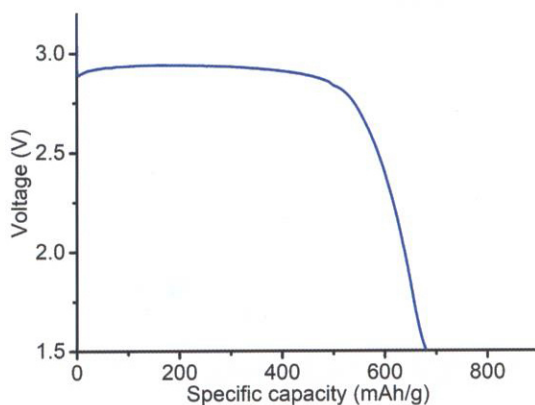
电化学性能 Electrochemistry performance

氟化石墨烯作为正极材料应用于锂氟化碳电池，在 C/10 的放电倍率下，可适用于能量型（放电平台 ≥ 2.6V，比容量 > 800mAh/g）和功率型（放电平台 ≥ 2.85V，比容量 > 750mAh/g）一次电池。

Fluorographene is used as cathode material of lithium-fluorocarbon batteries, at the discharge rate of C/10, it can be applied in energy-type and power-type primary batteries. The discharge platform of energy-type fluorographene is equal or greater than 2.6V, the specific capacity is more than 800mAh/g, while the discharge platform of power-type fluorographene is equal or greater than 2.85V, the specific capacity is more than 750mAh/g.



氟化石墨烯（能量型）
Fluorographene (energy-type)



氟化石墨烯（功率型）
Fluorographene (power-type)