

Novyka[®]

Family Surface Treatment and Interface Treatment Systems

Enabling Technology in High Performance Semiconductor Fabrication

Novyka[®] family surface treatment, interface treatment and radical enhanced thermal treatment (RETT[™]) systems provide unique solutions for critical surface treatment, interface control and materials modification capabilities, including damage free surface clean, selective surface treatment, and precise materials modification.

As part of Atomic Surface Engineering[™] and Atomic Interface Engineering[™] product portfolio, Novyka[®] family technologies address specific process integration requirements across advanced lithography, etch, clean, thin film and diffusion unit processes, and enable cutting-edge memory and logic semiconductor device scaling and specialty semiconductor device manufacturing.



Product Features and Advantages

Technology Versatility

- Vacuum-based surface clean, surface treatment, materials modification and thermal treatment
- Chemical and radical based processes, proprietary inorganic and organic precursors
- Precise ion energy tuning for depth control in materials modification
- Low temperature, short time, thermal budget reduction

Engineering Capability

High productivity system architecture

- Twin-wafer vacuum chamber
- Multi-chamber platform

Inductively coupled plasma (ICP) source with patented fully grounded Faraday shield design

- Radical source suitable for oxidation, reducing, water, halogen and organic chemistries
- Ion source with wide range ion energy tunability

Applications

Logic/Memory

- Critical surface clean
- Surface smoothing
- Selective silicon surface oxidation
- Selective silicon nitride surface oxidation
- Metal surface corrosion protection
- Surface hydrophilic treatment
- Surface hydrophobic treatment
- BARC and photoresist coating preparation
- Silicon surface oxidation suppression
- Dielectrics surface passivation
- Low k materials restoration
- Metal nitride surface treatment
- Metal (Cu, Co) anneal
- Precision energy silicon nitridation

Power/Analog IC

- Silicon surface passivation
- Silicon oxide surface protection
- Silicon nitride surface protection
- Photoresist coating preparation

Novyka®

原子层级表面工程和界面工程设备系列

最先进半导体制造中的关键技术

Novyka®系列表面处理设备为关键表面和界面控制提供独特的解决方案，包括无损伤表面清洁，选择性表面处理，精确材料改性，和自由基增强热处理（RETT™）工艺。作为 Atomic Surface Engineering™ 原子层级表面工程和 Atomic Interface Engineering™ 原子层级界面工程产品组合的一部分，Novyka®产品系列可满足光刻，刻蚀，清洁，薄膜和扩散单元工艺的特定工艺集成要求，支持最先进存储器 and 逻辑半导体器件尺寸微缩扩展以及特殊半导体器件制造。



产品特点和优势

技术多功能性

- 真空下的表面清洁、表面处理、材料改性和热处理
- 基于气体和自由基、专有的无机和有机前驱体
- 通过精确的离子能量调整进行材料改性的深度控制
- 低温、快速、低热预算

工程能力

高产能的系统架构

- 双晶圆反应腔
- 多反应腔平台

专利保护的接地法拉第屏蔽电感耦合等离子体源设计

- 自由基源: 氧化性，还原性，水，卤素和有机前驱体
- 离子源: 能量调节宽

产品应用

逻辑/存储

- 关键表面清洁
- 表面平滑度处理
- 选择性硅表面氧化
- 选择性氮化硅表面氧化
- 金属表面防腐蚀处理
- 表面亲水处理
- 表面疏水处理
- 抗反射层和光刻胶涂覆前置处理
- 硅表面氧化的抑制
- 介电质表面钝化
- 低 k 材料 k 值修复
- 金属氮化物表面处理
- 金属（铜，钴）退火
- 能量精确控制硅氮化

功率/模拟集成电路

- 硅表面钝化
- 氧化硅表面保护
- 氮化硅表面保护
- 光刻胶涂覆前置处理