

PO3039

**Mechanical/plasma pre-treating of ceramic surfaces prior to multilayer micro/nanocrystalline CVD diamond coating**Rui Silva<sup>1</sup>, Sérgio Pratas<sup>2</sup>, Cristiano Abreu<sup>3</sup>, José Gomes<sup>4</sup>, Filipe Oliveira<sup>2</sup><sup>1</sup>University of Aveiro, Aveiro, Portugal <sup>2</sup>CICECO-DEMaC, Un. Aveiro, Aveiro, Portugal  
<sup>3</sup>Physics Dept.- ISEP, Porto, Portugal <sup>4</sup>CMES - Un. Minho, Guimarães, Portugal

rsilva@ua.pt

Several surface pre-treating procedures were performed on silicon nitride ceramic substrates - sand blasting, CF<sub>4</sub> plasma etching, diamond powder US seeding - and their effect on tribological properties was compared. Four-fold multilayer micro/nanocrystalline diamond coatings were produced using the hot filament CVD technique. For the surface characterization and wear evaluation, SEM/EDS microscopy and 3D optical profilometry techniques were employed. Different loads (40-200 N) were applied during reciprocating sphere-on-flat sliding tests using CVD diamond coated samples. Threshold loads of about 150 N with no delamination were achieved denoting a superior tribological performance and high adhesion levels.

**Keywords**

chemical vapour deposition

diamond

multilayers

tribology

pretreating