Diamond Like Carbon on metals, plastics and ceramics

- Magnetron sputtered-DLC deposition using Positive Ion bombardment to enhance film mechanical properties.
- The use of magnetic and electric field and substrate location arrangements enables the control ratio of positive ions and electron bombardment on the substrate in order to control hardness and stress levels in the coating.
- The deposition method has been successfully applied to DLC deposition of a variety of substrates such as tools, glass or plastic surfaces.

<table>
<thead>
<tr>
<th>Family</th>
<th>H (GPa)</th>
<th>E (GPa)</th>
<th>μ*</th>
</tr>
</thead>
<tbody>
<tr>
<td>a-C</td>
<td>30</td>
<td>230</td>
<td>0.18</td>
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<tr>
<td>a-C:H</td>
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<td>190</td>
<td>0.14</td>
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<tr>
<td>WC-C</td>
<td>25</td>
<td>210</td>
<td>0.25</td>
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</tbody>
</table>

DLC on HSS without compliant layer
DLC on HSS with compliant layer
DLC delaminated coating
HSS substrate surface

No sample Bias required!!!

DLC
HSS
Compliant layer

Rockwell HRC tests — 150kg — Diamond indenter with conical tip
Molybdenum Disulphide (MoS2)

MoS₂ structure

Graphite structure

Coated

Uncoated

Commercial MoS₂
(Suffers from delamination)

0.1 Friction coefficient!

N4E MoS₂

Excellent lubrication properties in vacuum compared to commercial MoS₂