Super hard ta-C Coatings by means of Pulsed Laser Deposition

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Extraordinary film properties for various applications:

- extreme hardness
- no internal stress
- high wear resistance
- low friction coefficient
- chemical resistance
- optical transparency (VIS-IR)
- bio-compatibility
- high heat conductivity

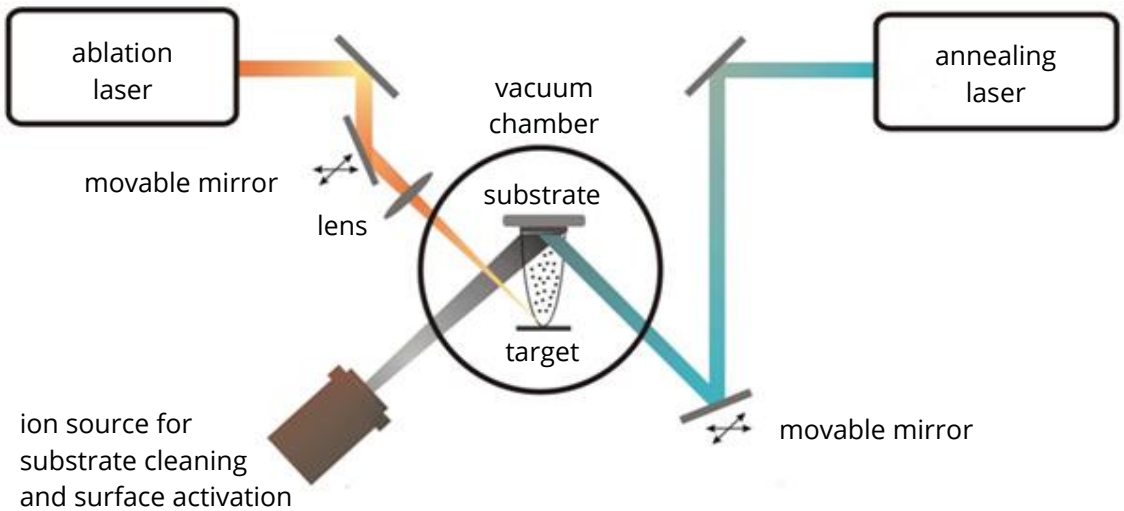
ta-C on various tungsten carbide hard metal substrates

Physical properties:

film thickness	< 10 µm
hardness	55 - 65 GPa
Young's modulus	750 - 900 Pa
friction coefficient	0.12 - 0.14
density	3.2 - 3.3 g/cm^3
optical band gap	2.0 - 2.3 eV
critical load (scratch test) on tungsten carbide hard metal	45 - 50 N


ta-C for medical applications

Principle of the generation of stress free ta-C films:



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