

ABSTRACT**PROCESS FOR TREATMENT WITH A BEAM OF IONS IN ORDER TO
PRODUCE A SCRATCH-RESISTANT HIGH-TRANSMITTANCE ANTIREFLECTIVE
SAPPHIRE**

Process for treatment of a sapphire part with a beam of a mixture of mono- and multicharged ions of a gas which are produced by an electron cyclotron resonance (ECR) source, where:

- the voltage for acceleration of the ions is between 10 kV and 100 kV;

- the implanted dose, expressed in ions/cm², is between $(5 \times 10^{16}) \times (M/14)^{-1/2}$ and $10^{17} \times (M/14)^{-1/2}$, where M is the atomic mass of the ion;

- the rate of displacement V_D , expressed in cm/s, is between $0.025 \times (P/D)$ and $0.1 \times (P/D)$, where P is the power of the beam, expressed in W (watts), and D is the diameter of the beam, expressed in cm (centimetres).

A part made of sapphire having a high transmittance and which is resistant to scratching is thus advantageously obtained.

[Figure 1]