



1

1 Growth of a polycrystalline diamond layer using plasma-enhanced chemical vapor deposition.

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2 An ultrapure single-crystal diamond made at Fraunhofer IAF.

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2

## DIAMOND MATERIAL OF THE FUTURE

Diamond is characterized by its exceptional properties: It is not only the hardest natural material, but provides high charge carrier mobility and a broadband spectral transparency. Furthermore, its chemical durability and its thermal conductivity are higher than those of any other material. Fraunhofer IAF produces single- and polycrystalline diamonds in plasma CVD reactors which can be adapted to meet the requirements of various applications.

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### Features

- **Optical:** broadband spectral transparency
- **Thermal:** highest thermal conductivity
- **Mechanical:** hardest natural material
- **Electrical:** high charge carrier mobility
- **Chemical:** highest durability

### Applications

- Lense for optical laser systems
- Electrode for batteries
- Transparent electrical contact
- Hollow diamond spheres in nuclear fusion experiments
- Abrasive
- Multi target detection