



## **Perfection in Purification and Coating, from the Ariane to CZ**

# Top Quality for High-Class Products



## Core Competency Purification and Coating

Schunk Kohlenstofftechnik (Carbon Engineering) is a member of the Schunk Group, a multinational technology group. Perfect purification and coating by Schunk can be found in the furnace construction, semiconductor, in the glass and in the aerospace industries, in such diverse products as:

- the coating of a Ariane nozzle
- the nose cone of an orbital glider
- space mirrors for telecommunications
- crucibles for the manufacture of silicon single crystals
- heating elements for furnaces

## High Temperature Purification at 2.200° C in a vacuum

Our high temperature purification of graphite and C/C components is carried out in a vacuum at 2,200° C using a dosage of purification gas. Impurities are converted into volatile compounds and removed by the gas flow.



*Graphite Jigs*

## Coating with Chemical Vapor Deposition (CVD)

Our coatings are made using the principle of chemical vapor deposition. Through the thermal decomposition of the gases, thin films are deposited on a reactant. The thickness of these films ranges from a few nanometers to a few hundred micrometers. The slow growth of these films leads to the formation of the highly ordered structures, which are responsible for the especially good properties.



*Coating of the combustion chambers by Schunk*



## Your Partner in Development

Together with our customers, we research and develop new materials and applications. For example, by coating graphite or C/C components using the CVD method, unthought-of application possibilities are opened up for these base materials.



*Susceptor for wafer processing*

## SiC Coatings

We use the outstanding characteristics of silicon carbide (SiC) – high melting point (2,700° C) and high decomposition temperature (above 2,000° C) – for example to make coatings for the aerospace industry.



*Combustion chamber element – rocket nozzle*

## PyC Coatings

CVD-PyC coatings have made it possible to manufacture components out of graphite and C/C which have very long useful lives, even under the most aggressive conditions.



*Melting crucible – pyro-carbon coated*

## Maximal Dimensions – Unique in the World

For the manufacture of polycrystalline silicon and silicon single crystals, we use components made of graphite and carbon fiber-reinforced carbon (C/C). Doing so allows us to achieve the largest dimensions in the production of these and many other components.



*32 inch crucible for the production of silicon single crystals*

*Space mirror with highly structured SiC coating by Schunk*



*100% perfection. Testing of purity values in Schunk's own laboratory with an atomic absorption spectrophotometer.*

## Competence Hotline

We would be glad to advise you about our high temperature purification at approximately 2,200° C in a vacuum and CVD method coatings such as

- SiC
- Pyro-carbon

Other coatings upon request

## Contact

Call or fax  
Volker Rauhut  
Telephone: +49 (641) 608-1690  
Telefax: +49 (641) 608-1673

E-mail:  
[volker.rauhut@schunk-group.com](mailto:volker.rauhut@schunk-group.com)

### Schunk Kohlenstofftechnik GmbH

Rodheimer Strasse 59  
35452 Heuchelheim  
Germany

Telephone: +49 (641) 608-0  
Telefax: +49 (641) 608-1673

[www.schunk-group.com](http://www.schunk-group.com)

### XYCARB Ceramics B.V.

P.O. Box 61 21  
5700 EV Helmond  
Netherlands

Telephone: +31(492) 54 83 45  
Telefax: +31(492) 53 41 35

[www.xycarb.com](http://www.xycarb.com)

### Schunk Ingenieurkeramik GmbH

P.O. Box 50 04 41  
47871 Willich  
Germany

Telephone: +49 (2154) 497-0  
Telefax: +49 (2154) 497-111

[www.schunk-sik.com](http://www.schunk-sik.com)