

neoCoat®-electrodes

Features and descriptions

Boron-doped-diamond (BDD) electrodes on Silicon

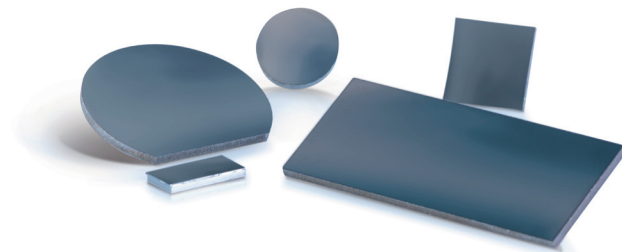
NeoCoat® BDD electrodes have various shapes and sizes and can also be tailored to specific customer needs.

NeoCoat SA offers different types of BDD-Electrodes. The electrodes consist of a polycrystalline boron-doped diamond (BDD) coating deposited on a silicon substrate. NeoCoat® BDD-electrodes are suitable either for water treatment or electro-analytical applications.

Doped-Diamond Electrodes

NeoCoat has developed a large range of boron doped diamond (BDD) electrodes on silicon substrate. In NeoCoat's facility high quality diamond coatings are deposited on large-scale HFCVD reactors.

By using various specific cutting techniques, NeoCoat is able to offer a wide variety of custom electrode shapes and sizes.



Standard neoCoat® BDD/Si electrodes

Standard BDD coating characteristics:

- Film thickness = 2-3 µm
- Boron concentration = 500 ppm
- Resistivity = 100 mΩ.cm

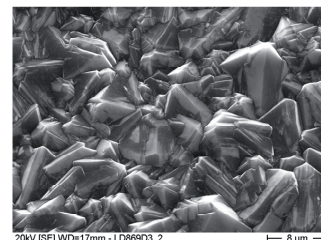
Available shapes, sizes and substrates:

p-silicon	Thickness (mm)	Shape and size (mm)	Coated side
Monocrystalline	2	rectangle, 25 x 50	Monopolar (one)
Monocrystalline	2	rectangle, 25 x 50	Bipolar (both)
Monocrystalline	2	disc, Ø 100	Monopolar (one)
Monocrystalline	2	disc, Ø 100	Bipolar (both)
Polycrystalline	1	square, 100 x 100	Monopolar (one)
Polycrystalline	1	square, 100 x 100	Bipolar (both)

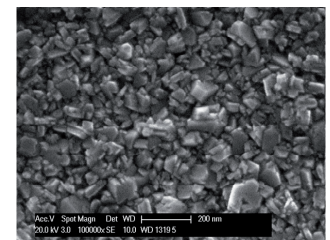
Custom neoCoat® BDD/Si electrodes

Available features (upon request)

Substrate	mono- or polycrystalline silicon (10^{-3} - 10^4 Ω.cm)
Electrode shape	disc, square, rectangular, tailored shapes
External size	discs (3 to 200 mm), squares (3x3 to 100x100 mm)
BDD thickness	from less than 100 nm up to more than 20 µm
Boron concentration	100 - 10000 ppm
BDD resistivity (mΩ.cm)	5 - 10'000
Thickness uniformity (3s)	+/- 5% (within 100 mm)
Grain size (average)	40 nm @ 100 nm film thickness 0.5 µm @ 3 µm film thickness
DCOI (Diamond Coating On Insulator)	diamond coating is also available on some insulating material such as Si_3N_4 or $\text{Si}_3\text{N}_4/\text{SiO}_2$
Specific treatment	backside metallisation Ti/Au available on request

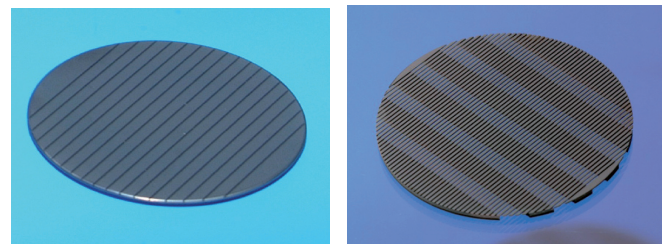


20 µm NeoCoat® diamond film



100 nm NeoCoat® diamond film

Examples of tailored structured electrodes



Optionnally, NeoCoat® electrodes can be delivered with a special silver paste to improve ohmic contact between electrode backside and metallic support.