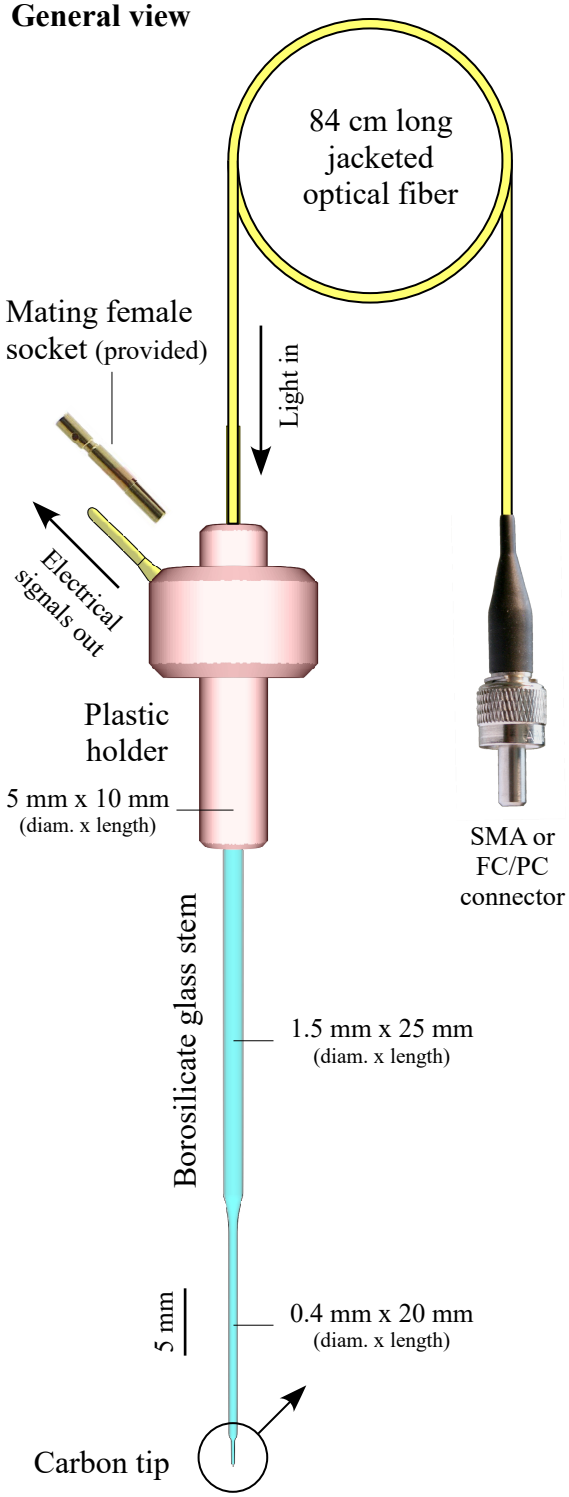
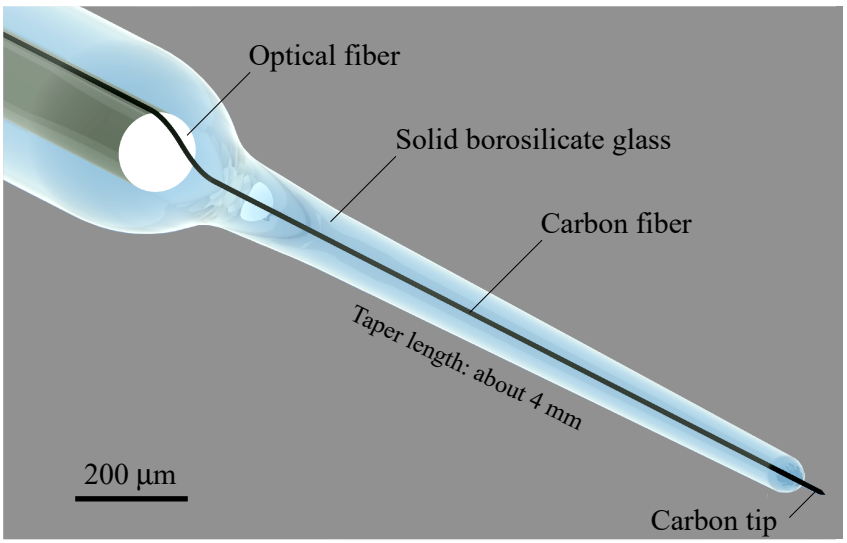
Carbon optrode for optogenetic stimulation and electrophysiological recordings

This fully assembled optrode integrates a light emitting 125 µm optical and a recording, 10 µm pitch-type carbon fiber into borosilicate glass sheathing in a coaxial arrangement to minimize tissue damage. The light projected by the optical fiber is conveyed down by the thin borosilicate glass taper and it is delivered through its convex ending toward the target neurons. The carbon fiber tip protruding from the dome-shaped glass ending picks up electrical signals from the affected neurons with excellent signal to noise ratio. Electrical signals may include spikes from single or multi units, field potentials as well as signals from electrochemical measurements or from microbiosensor applications.

General view



Tip of the carbon optrode



Technical data

Part no.:	CFO1025	CFO10100
Carbon tip length:	25 µm	100 µm
Spike recording:	Yes, single-unit	Yes, multi-unit
Light power at tip: (50 mW feed power at 473 nm)	4 mW	4 mW
Electrochemistry:	Yes, possible	Yes, optimized
Active area, approx.:	500 μm^2	2 850 μm^2
Impedance @ 1KHz	620 KΩ ± 15%	150 KΩ ± 15%
Autoclavable to:	140 °C	140 °C
Response to 1µM dopamine: (FSCV, 400V/s)	6 nA	38 nA

Part no. order info

Connector type	Carbon tip length, µm	
	25	100
SMA	CFO25-SM	CFO100-SM
FC/PC	CFO25-FC	CFO100-FC

Custom modifications are possible.

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