Use of boron-doped nanocrystalline diamond microelectrodes for amperometric determination of serotonin release in human platelets

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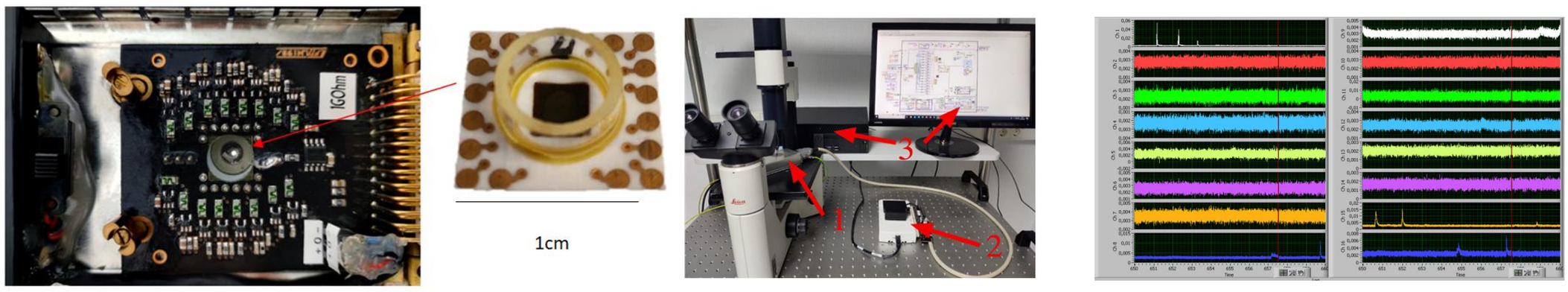
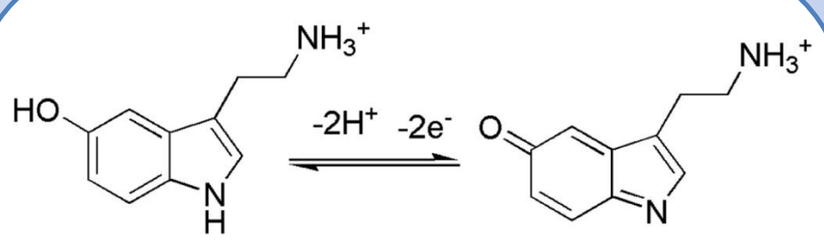
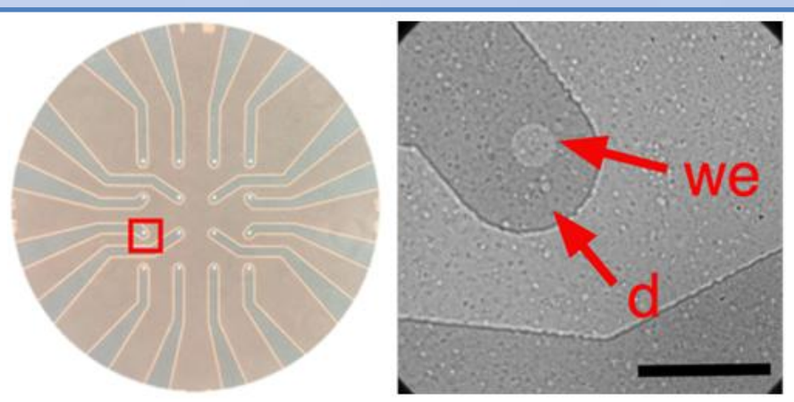


Boron-doped nanocrystalline Diamond Microelectrodes Array (BDD-MEA) system for the recording of amperometric signals from human platelets. Left: panel shows the electronic circuits and MEA device. Center: panel shows the general configuration (1. MEA into its Faraday´s cage, 2. ADDA board and 3. the computer). Right: panel shows the signal acquisition and recording by 16 channel MEA system. Each spike corresponds to single exocytotic events observed on 6,9 and 10 channels.

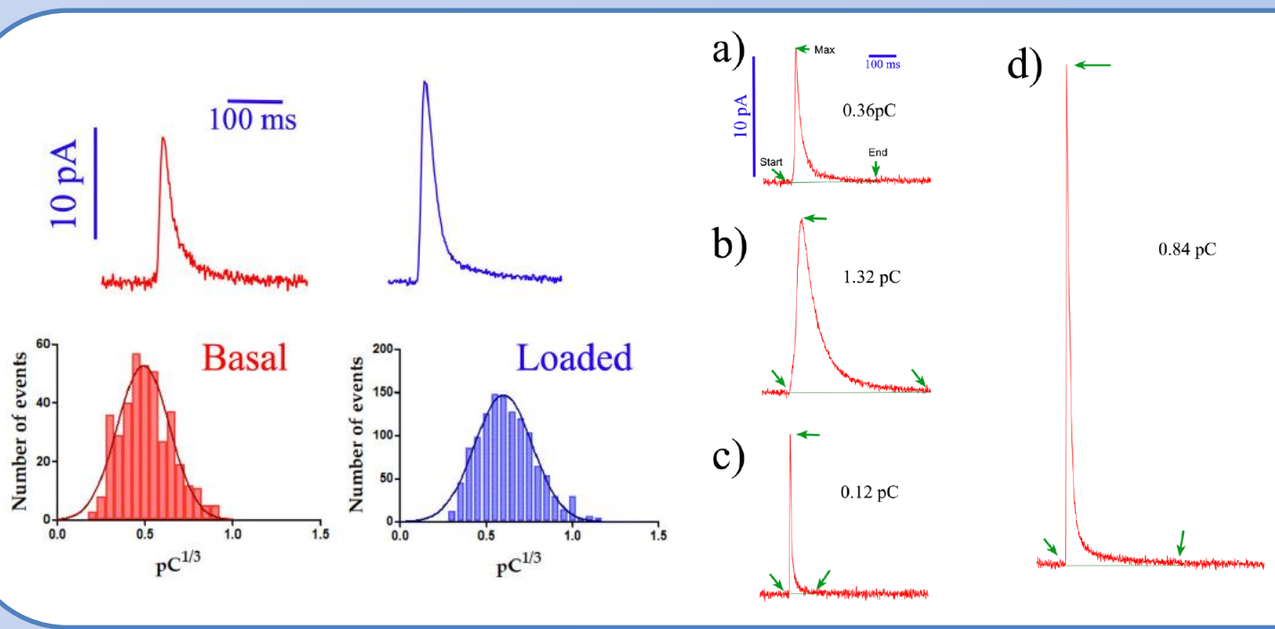
González-Brito et al. *Biosensors* 2023.



Electrochemistry detection of serotonin. The electrode tips detects the electrical current generated by the electrons released during the oxidation of serotonin molecules. Electrode potential +800 mV



General view of the inside of the BDD-MEA wafer. Left image: disposition of 16 microelectrodes of nanocrystalline diamond. Right: amplification of the previous picture showing one connector (**d**) and the active 20 µm-diameter surface (working electrode, we). González-Brito et al. *Biosensors* 2023.



Left. Typical recordings obtained by averaging hundreds of spikes from 10 volunteers: under basal (**red**) and serotonin-loaded platelets (**blue**). **Right.** Examples of different types of peaks detected (a, b, c and d).

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Conclusions: We demonstrate the effectiveness of BDD-MEA devices for the amperometrical detection of serotonin exocytosis from human platelets.

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