Electronic Supplementary Material (ESI) for Nanoscale.

Supporting information

Fluorinated Graphenes as Advanced Biosensors - Effect of Fluorine Coverage on Electron Transfer Properties and Adsorption of Biomolecules

V. Urbanová,[a] F. Karlický,[a] A. Matěj,[a] F. Šembera,[b] Z. Janoušek,[b] J. A. Perman,[a] V. Ranc,[a] K. Čépe,[a] J. Michl,[b,c] M. Otyepka,*[a] R. Zbořil*[a]

[a] Regional Centre of Advanced Technologies and Materials, Department of Physical Chemistry, Faculty of Science, Palacky University in Olomouc, 17 listopadu 1192/12, 771 46 Olomouc, Czech Republic
[b] Institute of Organic Chemistry and Biochemistry AS CR, v.v.i., Flemingovo nam. 2., 166 10 Prague 6, Czech Republic.
[c]Department of Chemistry and Biochemistry, University of Colorado, Boulder, Colorado 80301, United States

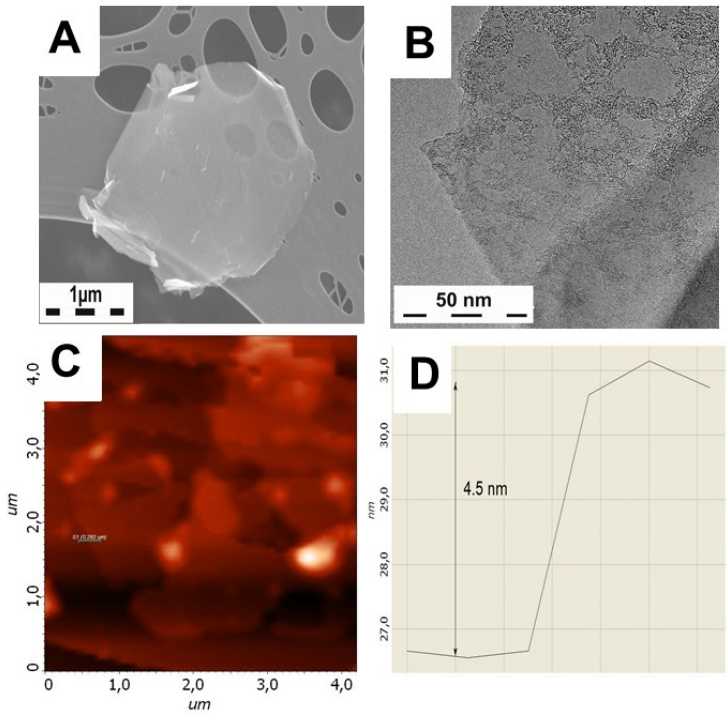

Figure S1: SEM (A), HRTEM (B), and AFM (C) including the selected AFM height profile (D) of the sheet in pristine graphene sample.

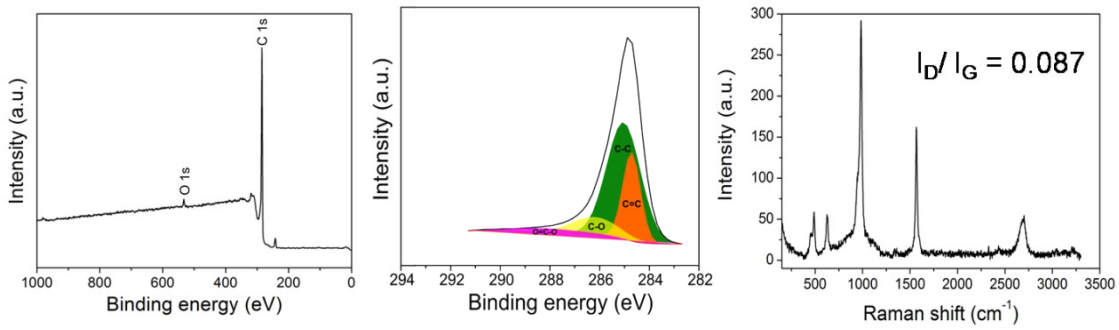

Figure S2: Survey XPS spectrum (left), high resolution C 1s XPS spectrum (middle) and Raman spectrum (right) of pristine graphene precursor used for controlled fluorination.

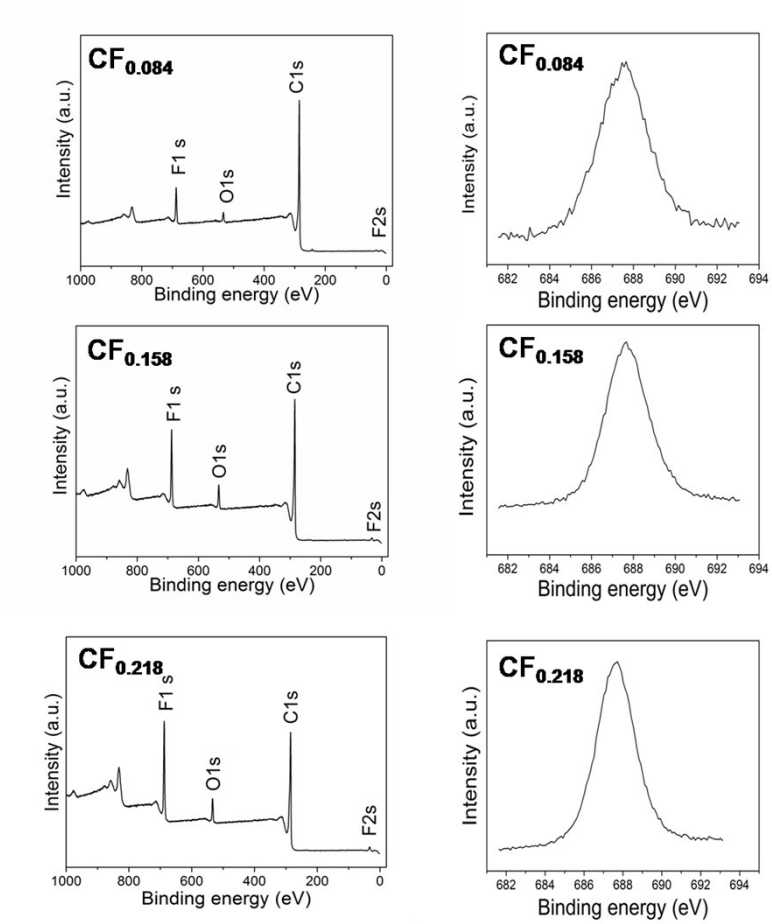

Figure S3: Survey and high resolution F 1s XPS spectra of the $CF_{0.084}$ (top), $CF_{0.158}$ (middle) and $CF_{0.218}$ (bottom) samples.

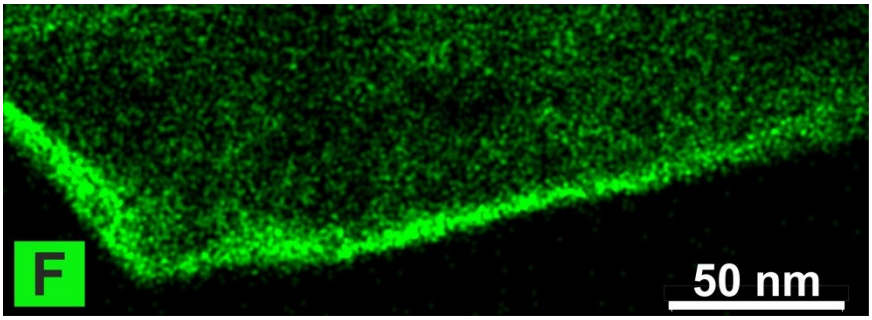

Figure S4: EDS chemical mapping of fluorine in $CF_{0.158}$ showing its homogeneous distribution within the sheet including edges.

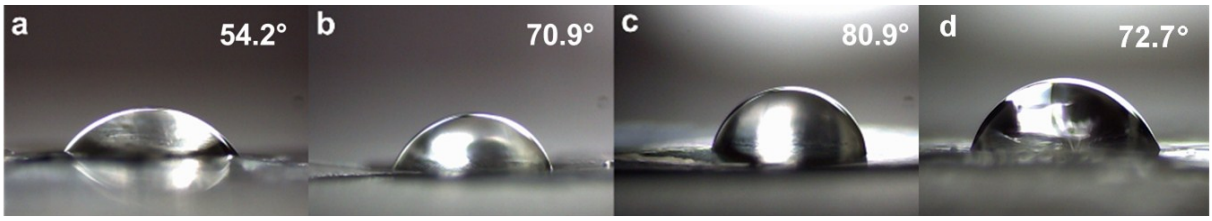

Figure S5: Contact angle measurement of (a) $CF_{0.084}$, (b) $CF_{0.158}$, (c) $CF_{0.218}$ and (d) HOPG.

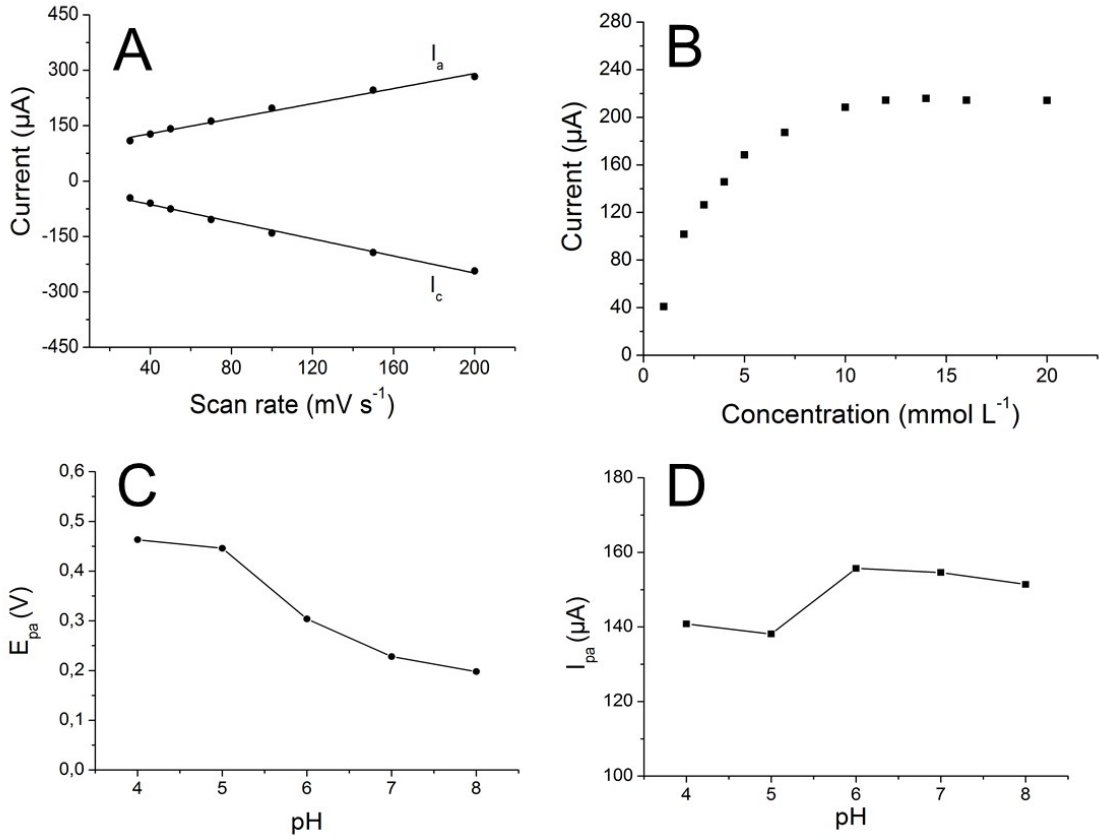

Figure S6: (A) Current peak responses of 5 mmol L^{-1} dopamine at various scan rates at GCE modified with $CF_{0.084}$ in a PBS buffer solution (pH 7.0). (B) Concentration study of dopamine using GCE modified with $CF_{0.084}$ recorded at a scan rate of 50 mV s^{-1} in PBS buffer solution (pH 7.0). (C) Oxidation current peak responses and (D) potentials of 5 mmol L^{-1} dopamine at various pH recorded at GCE modified with $CF_{0.084}$ at a scan rate of 50 mV s^{-1} in PBS buffer solution (pH 7.0).

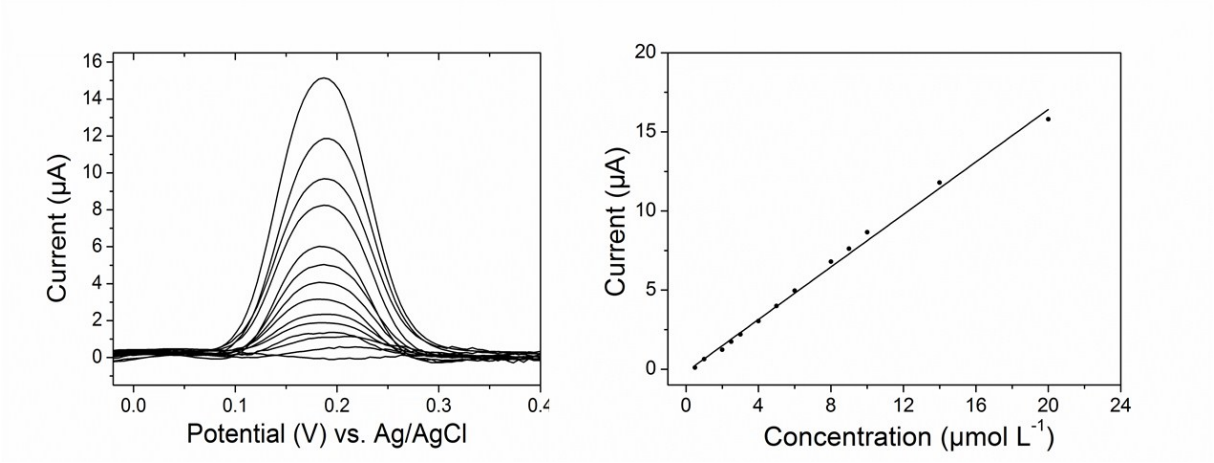

Figure S7: Square-wave voltammetry responses to increasing concentration of dopamine (left) with corresponding linear regression (right). All measurements were performed in PBS buffer (pH 7.0) using GCE modified with $CF_{0.084}$. Amplitude 25 mV, step height 5 mV, frequency 25Hz.