Controlling the surface oxygen groups of polyacrylonitrile-based carbon nanofiber membranes while limiting fiber degradation

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Supplemental Figures and Tables (4 pages):

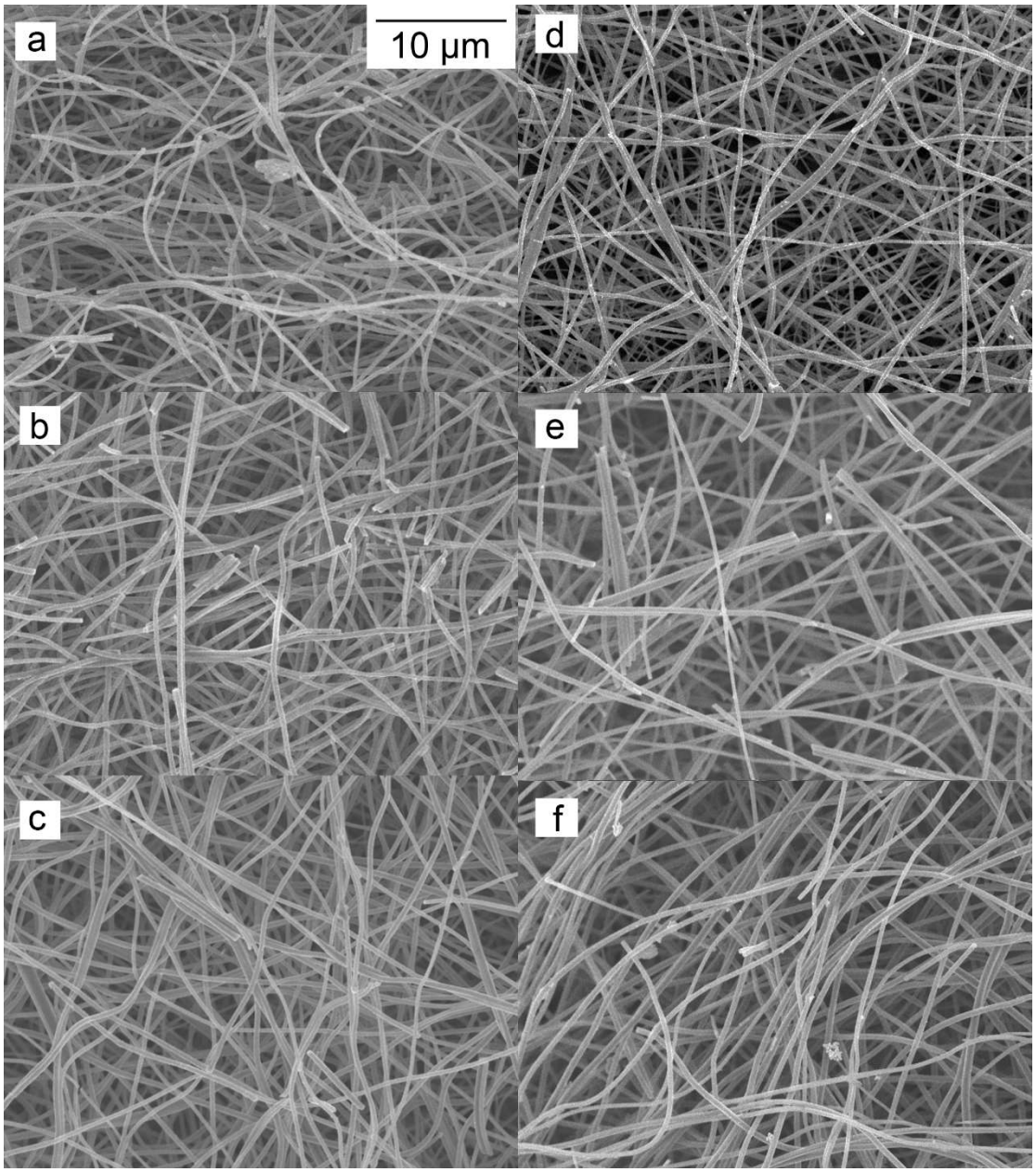

Figure S1. Scanning Electron Microscope images of oxidized ACNF with oxidant a) HNO_3, b) MnO_4-H, c) OsO_4, d) OsO_4+Oxone, e) OsO_4+$KMnO_4$-L and f) RuO_4

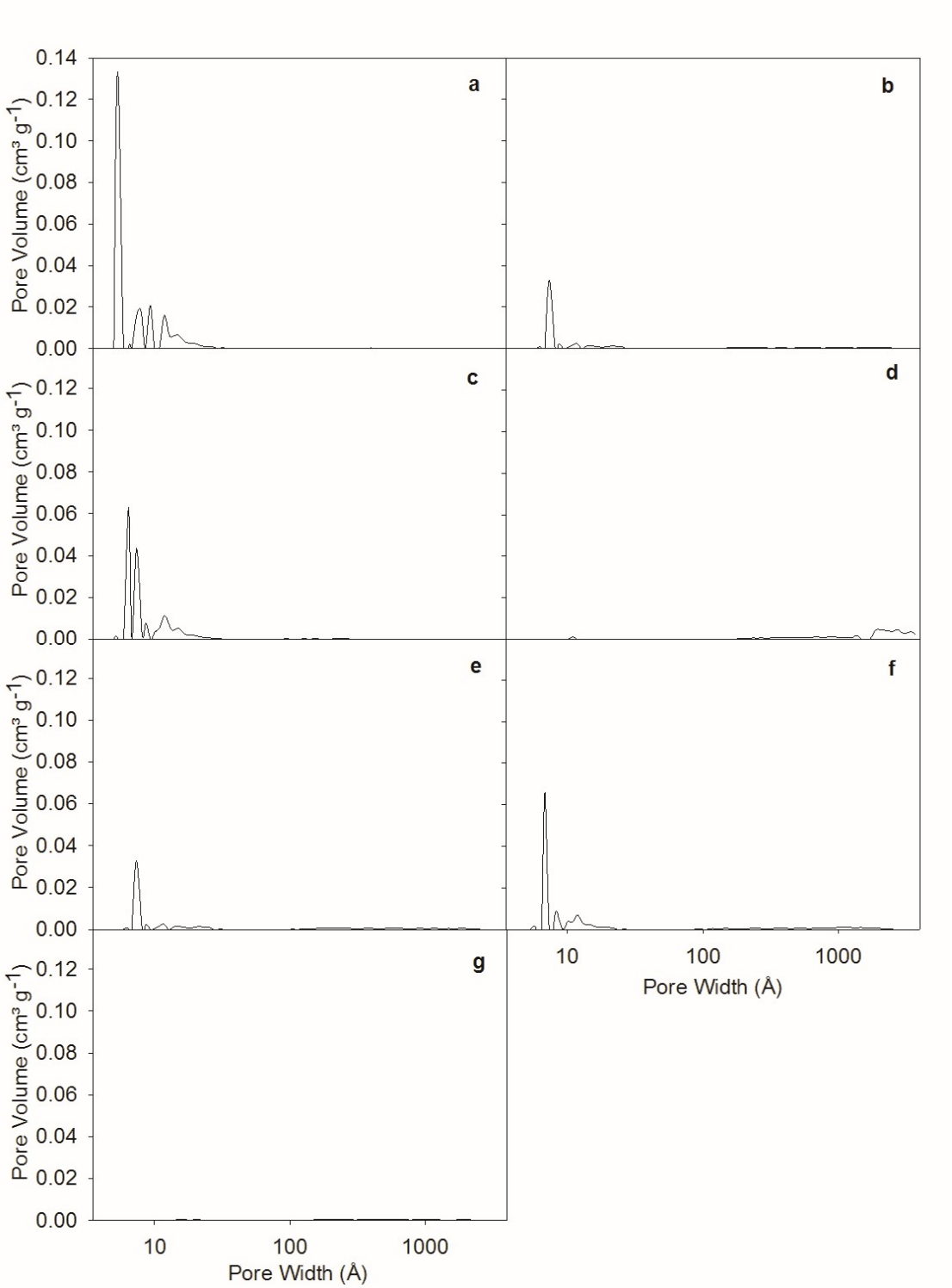

Figure S2. Pore volume distribution of ACNF oxidized with oxidant: a) no treatment, b) MnO_4-L, c) MnO_4-H, d) OsO_4-Oxone, e) OsO_4-MnO_4-L and f) OsO_4-MnO_4-H, g) RuO_4. Figures are shown on the same scale for comparison. The samples with Brunauer-Emmett-Teller (BET) specific surface areas below 10 m^2/g (OsO_4-MnO_4-L and RuO_4) do not show distinct peaks.

Table S1. Elemental analysis of oxidized ACNF samples. Carbon, hydrogen and nitrogen were measured by a CHN analyzer, while metal content was measured in digested samples on ICP-MS.

Sample	**C (%)**	**H (%)**	**N (%)**	**Mn (%)**	**Ru (%)**	**Os (%)**	**O (%)[1]**
Unmodified	75.1	2.4	7.4	-	-	-	15.1
MnO_4-L	58.2	3.1	10.3	0.09	bdl	bdl	28.3
MnO_4-H	64.1	1.7	9.4	0.01	bdl	bdl	24.8
OsO_4+Oxone®	64.7	1.7	18.5	bdl	bdl	0.45	14.7
OsO_4+MnO_4-L	64.4	2.5	6.4	0.01	bdl	0.30	26.4
OsO_4+MnO_4-H	65.8	2.6	6.8	0.02	bdl	0.69	24.1
RuO_4	56.7	2.6	15.6	bdl	0.02	bdl	25.1

[1] % oxygen is calculated by difference
bdl = below detection limit