Electronic Supplementary Material (ESI) for Nanoscale

Supporting Information

3D Hierarchically Porous Cu-BiOCl nanocomposite films: One-Step Electrochemical synthesis, Structural Characterization and Nanomechanical and Photoluminescent Properties

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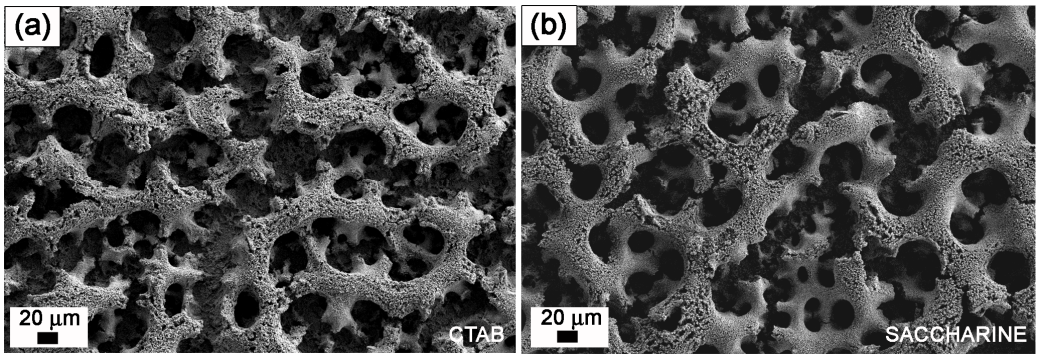

Figure S1. SEM images of the Cu-BiOCl composites obtained in the presence of (a) CTAB and (b) saccharine in the electrolytic solution. In both cases macro-cracks are observed leading to discontinuous porous network.

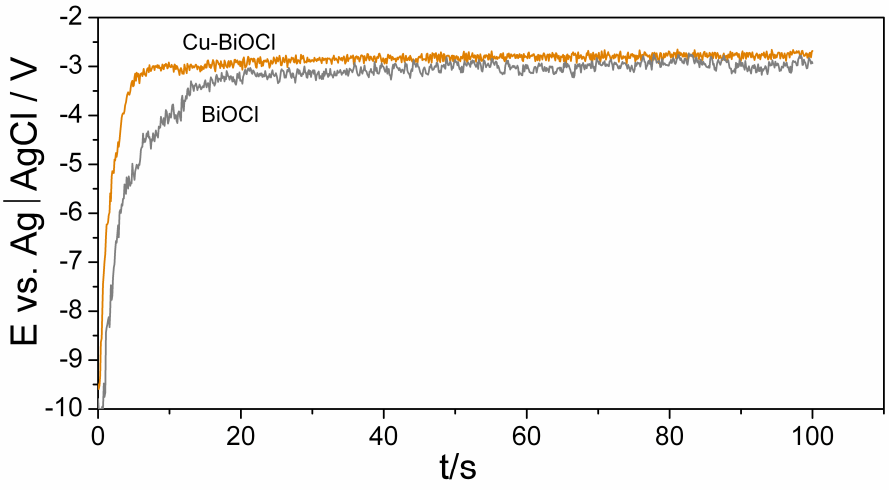

Figure S2. E-t transients recorded during the galvanostatitc electrodeposition at -1 A cm^{-2} of BiOCl and Cu-BiOCl composite porous films on Si/Ti/Au substrates.

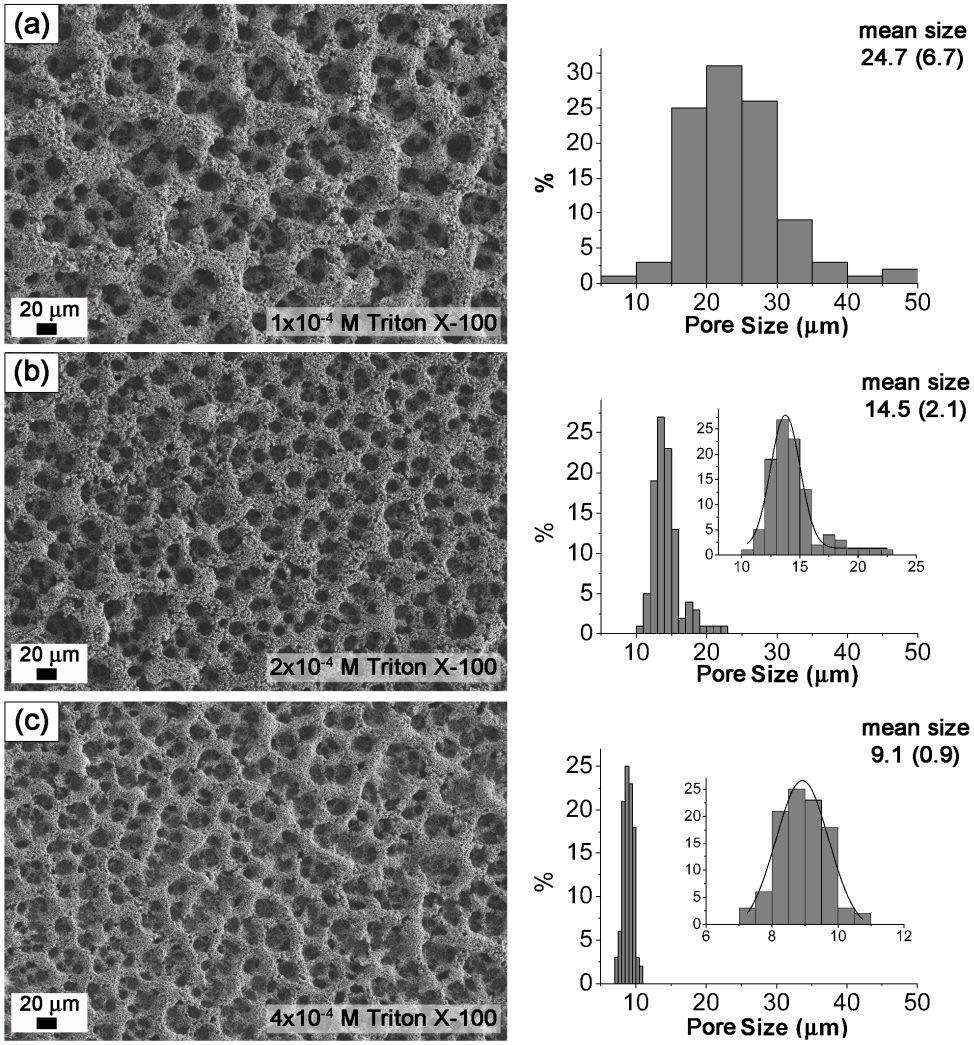

Figure S3. SEM images of the Cu-BiOCl composite films obtained using different Triton X-100 concentrations in the electrolyte: a) $1 \cdot 10^{-4}$ M, b) $2 \cdot 10^{-4}$ M and c) $4 \cdot 10^{-4}$ M. The corresponding pore size distributions and the mean size values are given on the right. The insets show enlarged views of the pore size distributions.

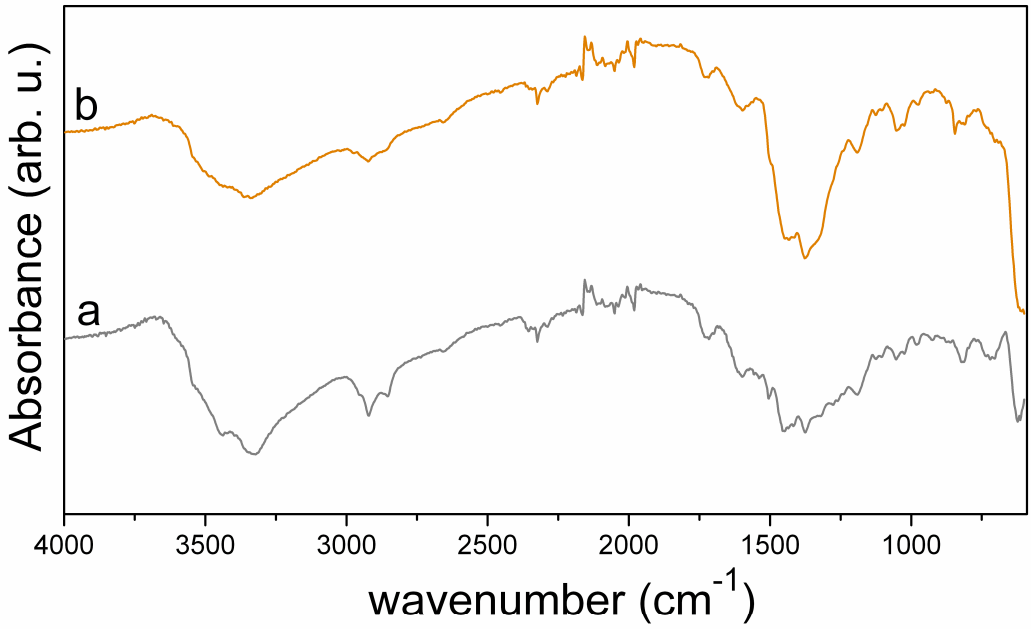

Figure S4. FT-IR spectra of the (a) Cu-free BiOCl film and (b) Cu-BiOCl composite film.

Sample	H (GPa)	E_r (GPa)	H/E_r	W_e/W_{tot}
Cu-BiOCl $1 \cdot 10^{-4}$ M	0.026 ± 0.005	0.42 ± 0.09	0.081 ± 0.005	0.625 ± 0.070
Cu-BiOCl $2 \cdot 10^{-4}$ M	0.062 ± 0.005	0.95 ± 0.03	0.065 ± 0.003	0.601 ± 0.065
Cu-BiOCl $4 \cdot 10^{-4}$ M	0.072 ± 0.004	1.18 ± 0.09	0.061 ± 0.005	0.598 ± 0.068

Table S1. Summary of the mechanical properties, evaluated by nanoindentation, of the electrodeposited Cu-BiOCl films, prepared using different Triton X-100 concentrations in the electrolytic bath.