

Supporting information for

Corona-treated polyethylene films are macroscopic charge bilayers

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ATR infrared spectrum

ATR infrared spectrum was obtained using a *Smiths IlluminatIR II* instrument coupled to an *Olympus BX51* microscope. The LDPE was identified according to the *Sadtler* infrared database.

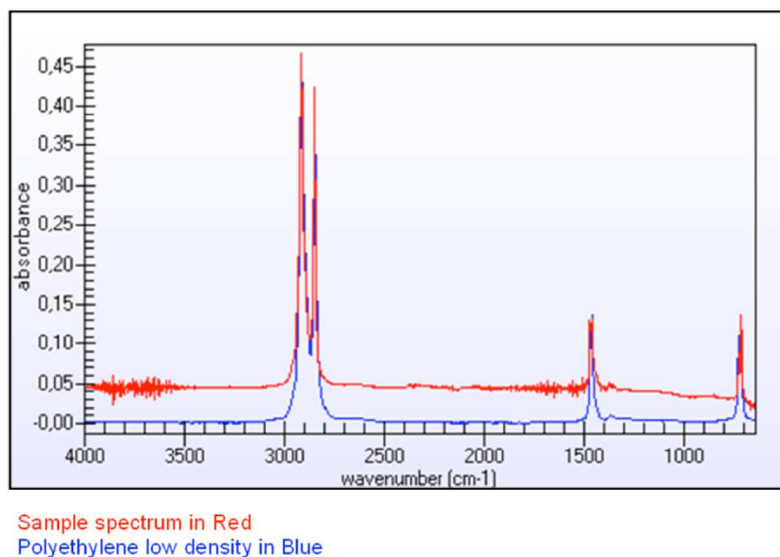


Figure S1. ATR infrared spectra for the polymeric film used in this work (red line) and for LDPE standard sample.

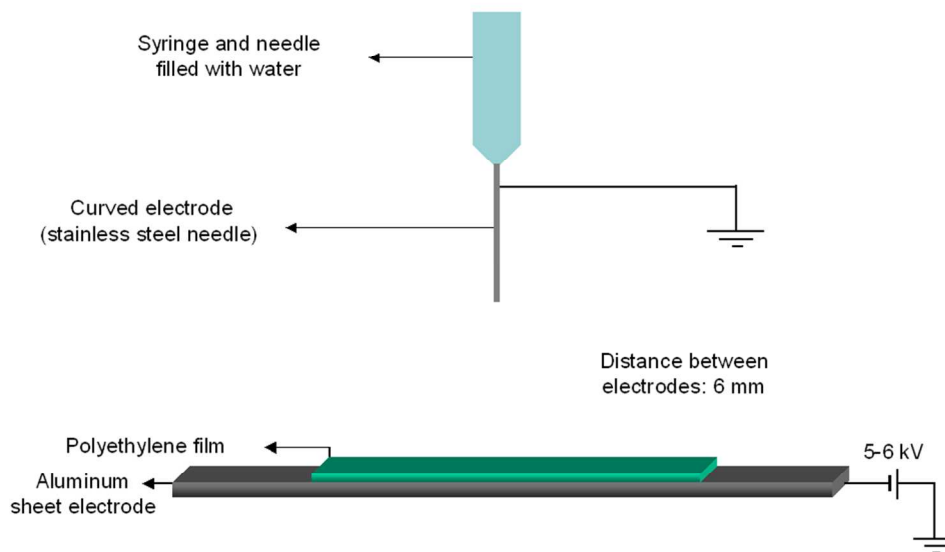


Figure S2. Schematic diagram of inverted corona apparatus used to charge polyethylene films.

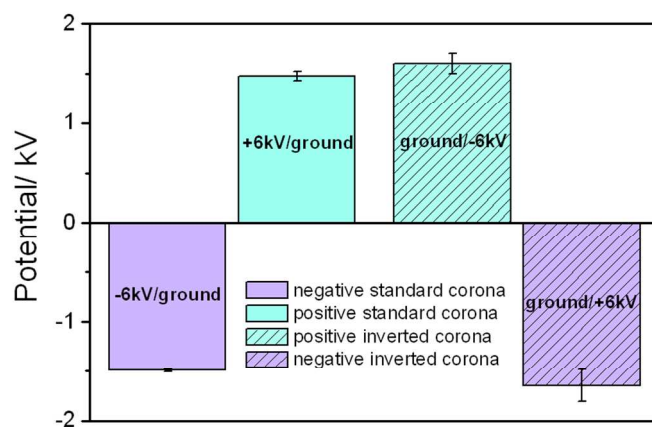


Figure S3. Electrostatic surface potential measured on the surface of polyethylene films facing the needle electrode. Voltage applied to curved/plate electrodes is indicated within the bars. The two bars to the left (right) correspond to standard (inverted) corona arrangement.

Ion efficiency removal

The ion efficiency removal (E) was calculated using the equation (1):

$$E = \frac{V_i - V_f}{V_i} \quad \text{Eq.(1)}$$

where V_i is the electrostatic potential of corona-treated PE film and V_f is the electrostatic potential measured after solvent rising.

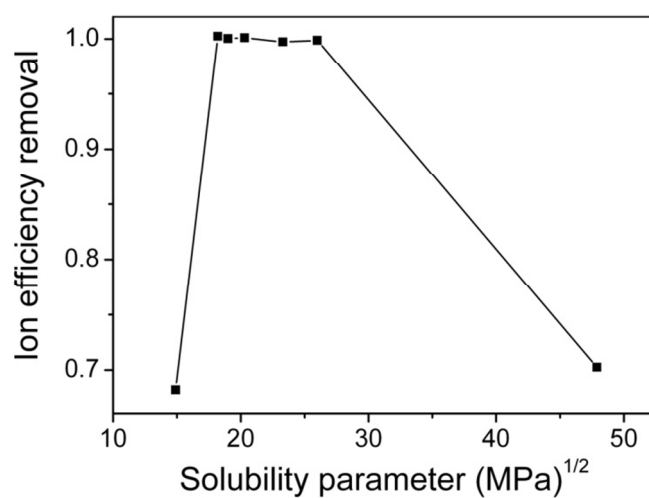


Figure S4. Ion efficiency removal by solvents as a function of Hildebrand solubility parameter.

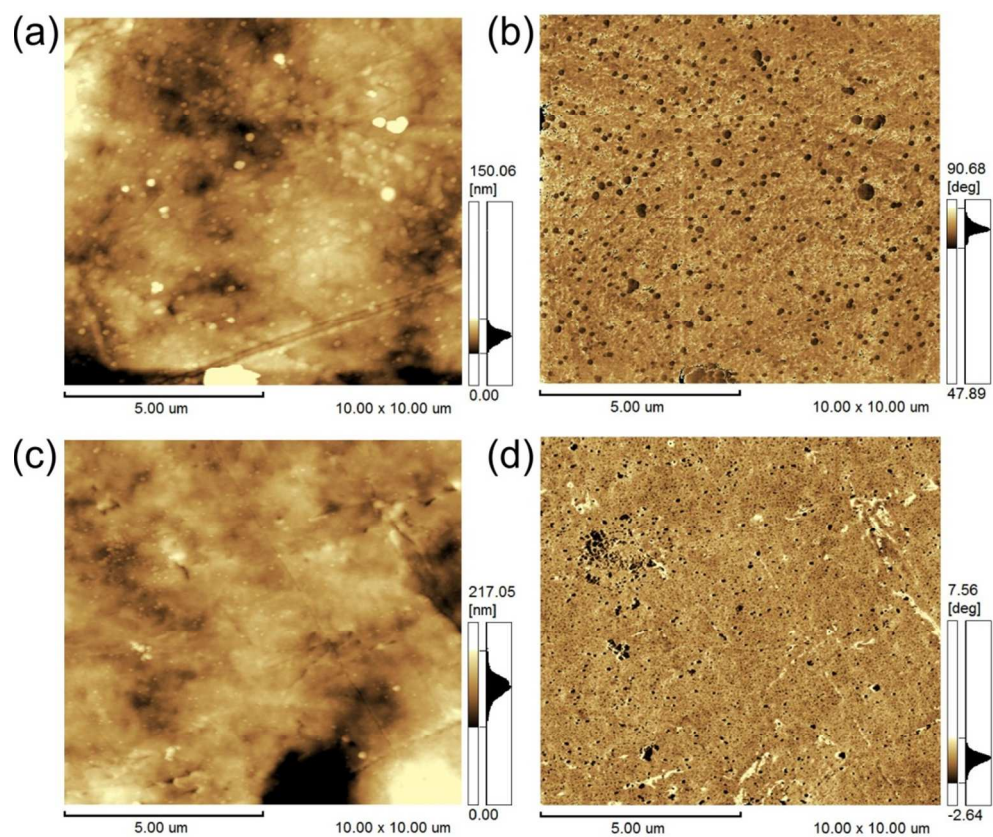


Figure S5. Topography (left) and phase contrast (right) images of polyethylene top surface acquired (a-b) 1 hour and (c-d) 24 hours after positive inverted corona discharge.