Abstract

The size distributions of ion clusters, their mobility and their intermediate progenies near waterfalls have been measured using three separated Gelman Cylindrical Ion Detectors (GCDs) in combination with an Scanning Mobility Particle Sizer (SMPS). It was observed that the concentration of aerosols up to 0.6 nm in diameter is of magnitude higher than at the reference points 10ms of meters away from the falls. Apart from a classical interpretation of this observation, herein we point out a quantum electromagnetic approach to demonstrate that water in this size range is highly structured and coherent. With the help of some additional ultra-weak photon emission measurements (UWPED) of waterfall aerosols the significance of this approach could be demonstrated.

Methods

The field setup included a triple set of GCD - each assigned to a size channel of 0.9, 1.5 and 2.0nm and an SMPS that covers a continuous size range of 5 to 350nm. Coherence measurement were done in the lab using UWPED.

GCD: It consists of three cylindrical and coaxially arranged electrodes. A fan ventilates the space between the concentric and middle electrodes. In the inter-electrode space ions of desired polarity and mobility are forced by the electric field across the electrostatic gradient to deliver their ion-related charges to a faraday cup electrometer (FCE).

SMPS: It is capable of measuring a particle size distribution in-between 5 to 350nm. Particles are classified with an Electrostatic Classifier that utilizes electrical mobility to discriminate the diameters. The concentrations are measured with the attached Condensation Particle Counter. In order to detect negative water ions, the SMPS was operated without neutralizer, assuming that particles carrying single charges only.

Results

Fig. 1 shows the negatively charged particle size distribution for various distances from the falls. As shown in Fig. 4, coherency cluster formation occurs below 100nm, thus measuring the concentration of negative 0.9–6nm ions was 2-3 orders of magnitude higher than at the reference sample.

As shown in Fig. 4, coherent water cluster formation occurs below 100nm, thus measuring the concentration of negative 0.9–6nm ions was 2-3 orders of magnitude higher than at the reference sample.