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[Continued on next page]

(54) Title: REAL-TIME MONITORING, PARAMETRIC PROFILING, AND REGULATING CONTAMINATED OUTDOOR AIR PARTICULATE MATTER THROUGHOUT A REGION, VIA HYPER-SPECTRAL IMAGING AND ANALYSIS

10 FIG. 1

12 [Real-time sampling and hyper-spectral imaging, analyzing the contaminated outdoor air particulate matter.]

(a) Real-time sampling, and hyper-spectrally imaging and analyzing, the contaminated outdoor air particulate matter, separately and simultaneously at each of a plurality of separate locations throughout the region, for generating a corresponding plurality of real-time local contaminated outdoor air particulate matter data-information packages each associated with a separate location.



14 [Real-time (synchronously) measuring outdoor weather conditions of the contaminated outdoor air particulate matter.]

(b) Real-time measuring outdoor weather-meteorological conditions, separately and simultaneously at the plurality of separate locations, in a manner synchronized with the real-time sampling, imaging, and analyzing, for generating a corresponding plurality of real-time local outdoor weather-meteorological conditions data-information packages each associated with a separate location.



16 [Real-time processing/analyzing the real-time local data-information packages.]

(c) Real-time processing and analyzing the real-time local contaminated outdoor air particulate matter data-information packages and the real-time local outdoor weather-meteorological conditions data-information packages, for real-time generating a set of real-time local geographical distribution parametric data-information profiles of the contaminated outdoor air particulate matter, showing real-time local geographical distributions of qualitative or/and quantitative parameters of contaminated outdoor air particulate matter of each location.



18 [Real-time processing/analyzing the real-time local geographical distribution parametric data-information profiles.]

(d) Real-time processing and analyzing the set of real-time local geographical distribution parametric data-information profiles of the contaminated outdoor air particulate matter, for real-time generating a set of real-time regional geographical distribution parametric data-information profiles of the contaminated outdoor air particulate matter, showing real-time regional geographical distributions of the qualitative or/and quantitative parameters of the contaminated outdoor air particulate matter throughout the region.

(57) Abstract: Real-time monitoring, parametric profiling, and regulating contaminated outdoor air particulate matter throughout a region, via hyper spectral imaging and analysis. Includes: (12) real time sampling, and hyper-spectrally imaging and analyzing, contaminated outdoor air particulate matter, simultaneously at separate locations throughout the region, for generating local contaminated outdoor air particulate matter data information packages; (14) real time measuring outdoor weather meteorological conditions, simultaneously at the locations, synchronized with the real time sampling, imaging, and analyzing, for generating local outdoor weather meteorological conditions data information packages; (16, 18) real time processing and analyzing the local data information packages, for generating sets of local and regional geographical distribution parametric data information profiles of contaminated outdoor air particulate matter, showing real time local and regional geographical distributions of qualitative or/and quantitative parameters of contaminated outdoor air particulate matter, via a global data-information processing and communications unit. Particularly suitable for monitoring, profiling, maintaining, operating and controlling, developing, and planning, infrastructure and vehicular traffic, of human populated regions.



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