PLAINTIFF'S EXHIBIT

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Development of a prototype fibrous aerosol monitor*

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The theory, design, and laboratory-testing of a prototype instrument capable of real-time selective detection and measurement of airborne fibrous-shaped particles is described.

The operation of this fibrous aerosol monitor (FAM) is based on the rotation imparted to the acicular particles by means of a rotating electric field of the order of 3000 V/cm. This field induces a dipole charge separation on the fibers and aligns them with the applied field. The selective detection of the fibers is effected by synchronous detection of the resulting modulation of the light scattered from a continuous-wave helium-neon laser beam by the rotating particles.

The theory of operation, design of the electrooptical detection configuration and the electronic signal processing method are discussed. By means of a scattering pulse sharpness discrimination technique, fibers

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