

**GREEN TECHNOLOGIES FOR SUSTAINABLE ENVIRONMENT:
CFR RESEARCH REVIEW**

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We are developing green technologies that benefit sustainable environment which will enable people and the environment to prosper together. The Particle Technology Laboratory (PTL) has developed many instruments and samplers to perform atmospheric measurements, which helped to establish the U.S. PM_{2.5} standard. The effects of PM_{2.5} pollutants on the atmospheric visibility and human health will be addressed. The major PM_{2.5} sources in China have been identified to come from coal burning, vehicle emissions and steel/cement plants. Filtration is the principal means to control PM_{2.5} pollutants. The Center for Filtration Research (CFR) at the University of Minnesota, consisting of 18 leading international filtration companies, was established to find filtration solutions to mitigate PM_{2.5} and other environmental pollutants. CFR investigators perform fundamental and applied research on air, gas and liquid filtration. Fundamental research in measuring and filtering sub-20 nm particles in liquid and in air will be presented. A Gasoline Particulate Filter (GPF) for Gasoline Direct Injection (GDI) engines has been developed to meet LEV3 and Euro 6 standard. A disruptive innovation, namely, the Solar-Assisted Large-Scale Cleaning System (SALSCS), is proposed to mitigate PM_{2.5} pollutants in urban air. A second generation SALSCS can be used to reduce CO₂ in the atmosphere. An integrative approach, from collaboration among academia, government, and industries, can effectively manage and mitigate the PM_{2.5} pollutants, particularly in China.