Biodegradable Air Filter and Ionizer Development

O'Rourke, Brian

Rollo, Allegra

Biking is a very popular activity in Beijing and, along with cars, serves as one of the primary modes of transportation. Our goal is to create a system that can be attached to a bike or a car that effectively takes out pollutants from the air. If masses of people were able to attach this technology to their bike or car, it could greatly improve the quality of the air in Beijing. A tube is attached onto the side of a bike; in the tube, at the front is the high-efficiency filter (biodegradable APINAT cloth) and in the middle is the ionizer. As one pedals on the bike and moves forward, air is naturally propelled through it by forward motion, the biodegradable material filters out the large particles and the ionizer charges the smaller particles and these negatively charged particles reenter the atmosphere. The ionizer uses a basic Cockcroft-Walton ladder network: it is an electrical network where energy is inputted at the active and neutral station and it goes through the ladder network; as it goes through, the electrical charge increases to 4 kV, which is the amount of energy you need to start the ionizing effect. Once in the atmosphere they attract positively charged particles. Once they are attracted together, they bond into molecules too large to remain in the atmosphere so they condense and fall to the ground. This takes the majority of pollutants out from the air and brings them to the ground, improving air quality.

Awards Won:

Fourth Award of $500