Improvement and Empirical Testing of a Novel Autonomous Microplastics-Collecting Semisubmersible

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Since the beginning of modern plastic's invention nearly a century ago, the human species as a whole has continually increased its rate of plastic consumption and waste. Until recently, this pollution's impact was thought to come primarily from macroplastics, the most visible plastics which fill beaches, suffocate marine life, and are easily comprehensible by the general public. Despite this focus, within the last 20 years microplastics have become an ever-increasing source of concern as evidence of their environmental impact has grown rapidly. These microplastics have since been found everywhere from the Marianas Trench to the human bloodstream, and their negative effects on health have gradually become similarly well known. Despite this threat, no organization – public or private – has tackled this issue where it is most impactful – in the open water where microplastics are free to bioaccumulate and wreak havoc on ecosystems. This project thus aims to fill the gap in microplastic pollution management by creating the first device capable of directly removing these plastics from our ecosystems at scale. This is done by creating a device which autonomously trawls surface waters with a mesh of fine pore diameter. It has been found through empirical testing that microplastics can be collected quite efficiently using this method, and through modeling it is predicted that given relatively little investment, microplastic quantities in the Great Lakes could be reduced by 85-95% by 2050 if we take action now to solve this, one of the most pressing environmental issues of our era.

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