Abstract Submitted
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The miniature parachute of the dandelion fruit[1] CATHAL CUMMINS, IGNAZIO MARIA VIOLA, Institute for Energy Systems, School of Engineering, University of Edinburgh, MADELEINE SEALE, Institute of Molecular Plant Sciences, School of Biological Sciences, University of Edinburgh, ENRICO MASTROPAOLO, Institute for Integrated Micro and Nano Systems, Scottish Microelectronics Centre, School of Engineering, University of Edinburgh, NAOMI NAKAYAMA, Institute of Molecular Plant Sciences, School of Biological Sciences, University of Edinburgh — At the low Reynolds number at which small plant fruit (the seed-bearing structure in flowering plants) fly, there are a variety of modes of flight available: from parachuting to gliding and autorotation. Here we will explore the aerodynamics of small plumed fruit (dandelions) that utilise the parachuting mode of flight. If a parachute-type fruit is picked up by the breeze, it can be carried over formidable distances. Incredibly, these parachutes are mostly empty space, yet they are effectively impervious to the airflow as they descend. In addition, the fruit can become more or less streamlined depending on the environmental conditions. In this talk, we will present results from our numerical and physical modelling that clarify how these tiny parachutes achieve such impermeability despite their high porosity. We reveal that the dandelion's parachute tunes its permeability to achieve the aerodynamic stability as it flies, which helps confer the fruit's incredible flight capacity.

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