

University of Bristol; Test and Development of Small Superpressure Balloons

Project Summary

A "Small Superpressure Balloon" is "*a pressurized balloon with a payload of 10g to 500g intended to float in the lower stratosphere for months or years at a time*".

Large, long duration superpressure balloons are now a relatively mature technology and have been used by NASA for science campaigns and most notably Google's "Project Loon". Whilst these pumpkin-style balloons can carry payloads weighing up to 1000kg, they are complex to construct and require very significant investment and infrastructure to launch. Our proposal is to dramatically shrink and simplify the balloon to produce a design that is cheap, easy to construct and can be launched by hand.

With recent developments in multilayer polymer films (driven by the food packaging industry), electronics (driven by the smartphone industry) and lightweight payloads (driven by cubesats) balloons can now be used as a *low-cost proving ground for earth observation instruments*, as nodes in a communications network and for "citizen science" projects.