

Setting Sail for Orbit

By Professor Colin McInnes



Conventional spacecraft use chemical rockets, which require a propellant to be heated through combustion and ejected through a nozzle to form a high-speed jet of hot exhaust gas. For some very high-energy missions, the mass of propellant required is so large that they are essentially impossible with chemical rocket propulsion.

Solar sails avoid the limitations of chemical rockets by using momentum from sunlight.

This talk discusses the physics behind solar sailing, some of the missions which solar sails can be used for, and the engineering challenges which are being faced to develop solar sailing for the future.

This talk is suitable for students in S3 and above.

Professor Colin McInnes works in the Department of Mechanical Engineering at the University of Strathclyde and is a consultant to NASA.

Curriculum Links

- **Standard Grade Physics: Space Physics**
- **Higher Physics: Mechanics and the Properties of Matter**
- **Advanced Higher Physics: Mechanics**

The Royal Society of Edinburgh, Scotland's National Academy, is Scottish Charity No. SC000470
Photos courtesy of Professor McInnes