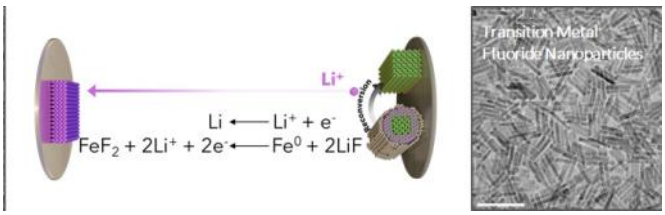
PROJECT NUMBER

17051

Stable high energy density materials for lithium-ion batteries

A method that uses ionic liquid electrolytes in combination with transition metal fluorides to achieve lithium-ion batteries with stable cycling and a high energy density. Transition metal fluorides are unique materials that exhibit high energy densities. Oxford researchers have developed a method that exploits their properties to develop stable lithium-ion batteries with a high energy density.

Applications: Lithium-ion batteries, fluoride-ion batteries



Features	Benefits
The battery uses ionic liquid electrolytes to enable the cycling of transition metal fluorides	Achieves stable cycling and high performance; High practical charge/discharge rates
Can achieve the full theoretical capacity of transition metal fluorides with minimal capacity loss over time	Transition metal fluorides allow battery capacities three to five times greater than conventional lithium-ion batteries
Materials have little to no flammability and cycling stability is uncompromised at higher temperatures	Safer battery system than those based on conventional organic electrolytes; The battery can withstand power surges
Avoids complex fabrication methods normally associated with transition metal fluorides	Batteries are easy to manufacture

Patented and Available for

- Co-development
- Consulting
- Licensing

To find out more, contact enquiries@innovation.ox.ac.uk and quote the project number.

The above information is provided ‘as is’ without conditions or warranties. Oxford University Innovation makes no representation and gives no warranty that it is the owner of the intellectual property rights in the technology described. © Oxford University Innovation Ltd 2026, Buxton Court, 3 West Way, Oxford, OX2 0JB.