

Algae finds use in batteries

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A group of researchers at the Ångström Laboratory at Uppsala University have discovered that the distinctive cellulose nanostructure of Cladophora algae can be used to form an electrode for use in environmentally friendly batteries.

'These algae have a special cellulose structure characterised by a very large surface area,' said Gustav Nyström, a doctoral student in nanotechnology. 'By coating this structure with a thin layer of conducting polymer, we have succeeded in producing a battery that weighs almost nothing and that has set new charge-time and capacity records for polymer-cellulose-based batteries.'

Despite extensive efforts in recent years to develop new cellulose-based coating substrates for battery applications, satisfactory charging performance proved difficult to obtain. However, no-one had tried using algal cellulose before.

Researcher Albert Mhryanyan and Prof Maria Strømme at the Nanotechnology and Functional Materials Department of Engineering Sciences at the Ångström Laboratory have been investigating applications of the cellulose from Cladophora algae for a number of years.

'We have long hoped to find some sort of constructive use for the material from algae blooms and have now done so,' said Strømme, leader of the research group.

Specifically, the new electrode material consists of a nanostructure of algal cellulose coated with a 50nm layer of polypyrrole. Batteries based on the material can store up to 600mA per cm³, with only six per cent loss through 100 charging cycles.

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