

Nanocomposites from plastic pyrolysis gas for electrochemical applications

Overview

The development of efficient energy storage devices such as supercapacitors plays an important role in the modern energy management system. A novel nanocomposite material comprising of carbon nanoplatelets and CaCr_2O_4 is developed that demonstrate superior electrochemical performance compared to conventional graphite material. One of the unique features of this invention is that for the synthesis, waste gaseous streams of plastic pyrolysis plants are utilized providing economic benefits to plant operators.

Key features

- ➔ High supercapacitance of 51 F/g in 1M H_2SO_4 at 2 A/g.
- ➔ High chemical resistance and stability in acidic environment.
- ➔ Sustainable recycling of pyrolysis gases from plastic pyrolysis plants.

Applications

- ➔ Energy storage
- ➔ Sensors
- ➔ Electrocatalysts

Market opportunities

- ➔ Manufacturing of electrochemical devices as a replacement of graphite or other carbon-based materials.

Advantages and benefits

- ➔ Suitable for utilization with acidic electrolytes.
- ➔ Soft material, can be compacted into required shape (e.g., pellets, rods, plates) without a binder.

