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PVA-POLYESTER AS HIGHLY CONDUCTIVE AND STABLE POLYMER ELECTROLYTES LITHIUM/SODIUM SECONDARY BATTERIES

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Researchers at CIC energiGUNE have developed a novel family of PVA-based dry polymer electrolytes with high ionic conductivity and good electrochemical stability.

The choice of polymer matrix is a critical criterion for obtaining a highly conductive and mechanically/electrochemically stable polymer electrolyte at close to ambient operating temperatures. In order to obtain the aforementioned properties, the polymer matrix should possess better Li^+ solvation properties and facilitate faster Li salt dissociation. In this sense, Poly Vinyl Alcohol (PVA) was chosen due to its excellent film forming property, biodegradability, non-toxicity and non-carcinogenetic and excellent chemical resistance.

The polymer electrolytes of the invention have a PVA polymer backbone with side chain esters. The esters can either be a single ester or a double ester group or even a salt anion attached to the ester group. This modification facilitates the high flexibility of the polymer chain thereby leading to a decreased T_g value and high ionic conductivity at close to ambient temperature for successful high performance solid-state batteries compatible with high voltage cathodes.

VALOR AÑADIDO

- ✓ High ionic conductivity at close to ambient temperatures
- ✓ High electrochemical stability
- ✓ Simple synthesis technique, easily upscalable

APLICACIÓN DE LA TECNOLOGÍA

- ✓ Li metal polymer batteries
- ✓ Post lithium solid-state batteries

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