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Enhancement of differential double layer capacitance and charge accumulation by tuning the composition of ionic liquids mixtures

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Evolution from fossil fuel energy to renewable energy sources and technologies is in the spotlight towards an accelerated energy transition process. One of the challenges of the intermittent renewable energy production is related to the existence of an appropriate energy storage technology in order to effectively use the renewable energy generated. Electrochemical energy storage devices rely on the key property of the electrical double layer integral capacitance. The use of mixed ionic liquids can be an effective strategy to increase the performance of electric double layer capacitors.

Here, the studies on the interfacial behaviour of ionic liquids mixtures containing a common ion for a model mercury/ionic liquid interface are reported. Enhancement of the differential capacitance, nearly 3 times higher compared to ILs in the pure state, was achieved by an appropriate combination of ion size both in cation and the anion and

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