

# Industrial requirement of materials and electrolyte for supercapacitors

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Electrochemical double-layer capacitors (EDLCs) are nowadays considered among the most important energy storage devices [1-3]. EDLC are characterized by high power densities (ca.  $10 \text{ kW}\cdot\text{kg}^{-1}$ ), long cycle-life ( $> 500.000$  cycles) and have a very high efficiency especially for short-term use (discharge time of some seconds to minutes) compared to commercially used Lithium-Ion-Batteries (LIBs). In EDLCs the energy is stored through a physical process -the double-layer formation- occurring at the surface of the electrodes. This process, although guarantee high power, is limiting the energy of these devices and EDLCs can only provide about a tenth of the energy density of batteries, which are devices relying on a chemical storage process taking place in the bulk of the electrodes. Several studies indicate that if the energy of EDLCs would increase from the actual  $5\text{-}8 \text{ Wh}\cdot\text{kg}^{-1}$  to  $12\text{-}15 \text{ Wh}\cdot\text{kg}^{-1}$ , the number of applications, and thus the market, of these devices would increase dramatically. Consequently, great efforts are currently dedicated toward the realization of high energy EDLCs. [1-3].

In this presentation the industrial requirements for the materials and electrolytes used in EDLCs will be discussed in detailed. Furthermore, the next generation EDLCs materials will be analysed, and examples of novel electrolyte will be considered.

## References

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