

Special Issue on
Energy Storage: Hybrid Supercapacitors

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Supercapacitors are known for high power densities and are used in many applications ranging from regenerative brakes to load leveling applications and so forth. However, their energy densities are not significant enough to replace the long-serving Li-ion batteries. As the demand for enhanced energy and power densities has been rapidly growing in consumer and automotive markets, there is a great urgency for the development of advanced systems that can handle increased energy storage per given volume or weight and deliver high currents. This is where a new class of hybrid supercapacitors have gained quite a bit of momentum. Current research trends have also been focusing on developing hybrid supercapacitors with a combination of electrode materials that exhibit pseudocapacitance, intercalation, and double-layer charge storage mechanisms. There have been increasing numbers of publications in this area, where the researchers are testing battery electrodes in combination with supercapacitor electrodes to achieve the characteristics of both the batteries and supercapacitors. Development of such systems will very likely serve many practical applications and possibly secure a prime position in the future energy needs.

This special issue is aimed at covering the future and promising strategies for the development of sustainable high energy and high power density supercapacitors. The potential topics include but are not limited to new concepts, electrode chemistries and designs, methods for electrode materials fabrication, electrolyte chemistries and designs, system level designs, modeling studies, and any efforts that focus on the aspects to drive the present and future research in these areas for the development of asymmetric and hybrid supercapacitors. All the authors with expertise in these topics are cordially invited to submit their manuscripts to the International Journal of Electrochemistry. Noteworthy communication papers, full papers, and review articles covering the current state of the art are welcome.

Potential topics include but are not limited to the following:

- ▶ Carbon-based hybrid supercapacitors, including activated carbon, CNT, and graphene-based electrodes
- ▶ Oxide-, carbide-, and nitride-based supercapacitors
- ▶ Composite electrode-based supercapacitors
- ▶ Porous and nanostructured electrode-based supercapacitors
- ▶ Design of symmetric and asymmetric supercapacitors

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/ijelc/enst/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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