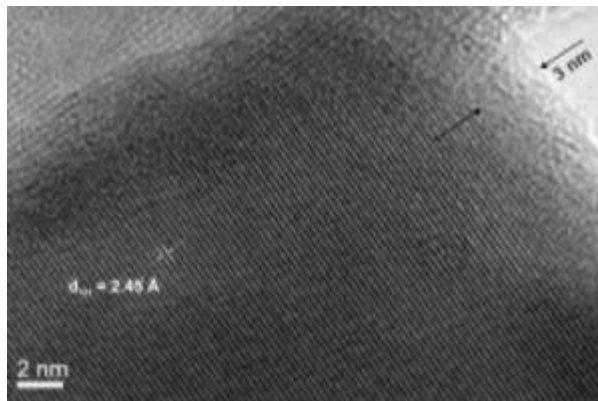




Focus on Energy Storage

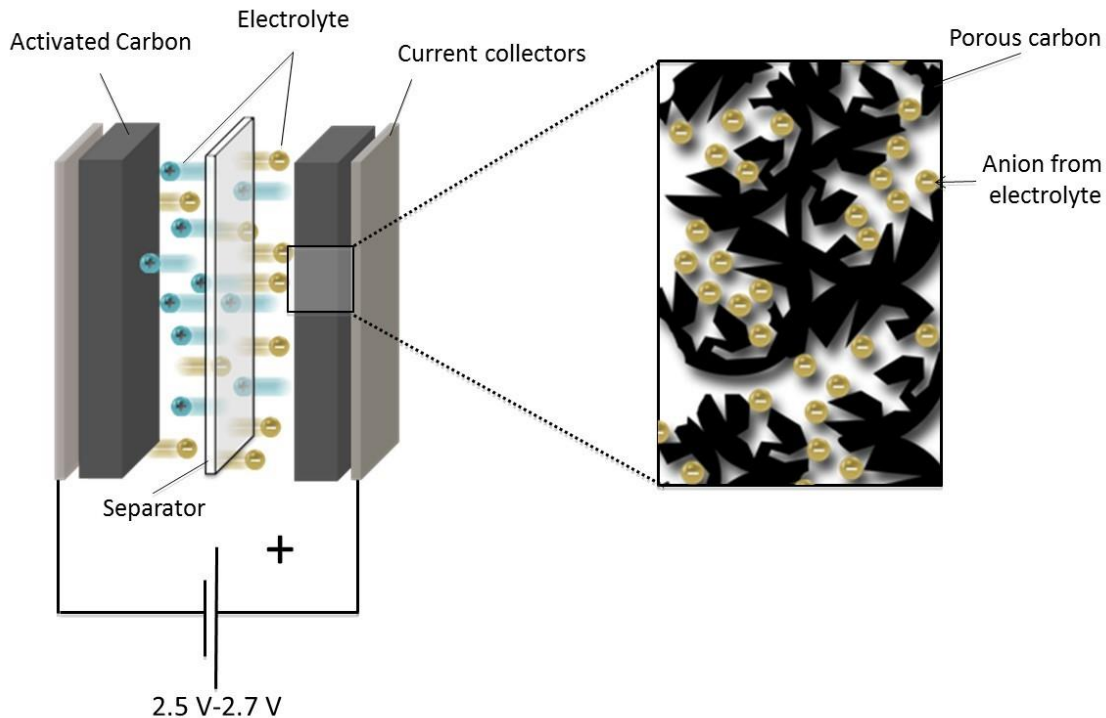


Cathode materials for lithium-ion batteries in the Institute of Technical Science of SASA

The key parameters related to the cathode materials for commercial use are a high specific capacity, good cycling stability, capacity retention at high current rates, as well as the simplicity of the synthesis process [1]. The aim of the program, realized within the framework of the **Project III 45004** and financed by the Ministry of Education, Science and Technological Development of the **Republic of Serbia**, was to find new, simple and eco-

efficient methods for obtaining good-quality cathode materials for lithium-ion batteries, i.e. LiFePO_4 and $\text{Li}_2\text{FeSiO}_4$.

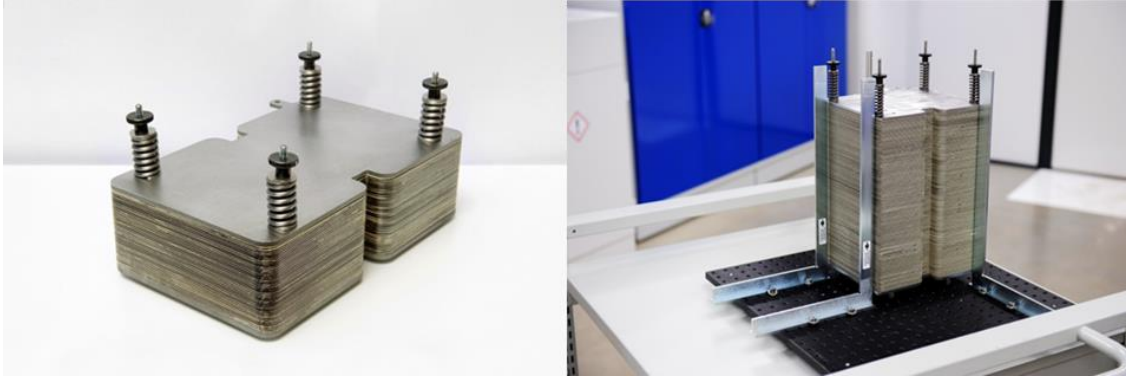
[Read more](#)



The power of supercapacitors

In the past two decades, a lot of attention has been put on Electrochemical Capacitors (ECs), also known as supercapacitors, since they are one of the most promising electrochemical energy storage devices for high power delivery or energy harvesting applications. The charge storage mechanism in supercapacitor electrodes is achieved through electrostatic attraction between the ions of an electrolyte and the charges present at the electrode surface, leading to a charge separation at the electrolyte/electrode interface that works as a dielectric capacitor. Since no faradaic reaction is involved in the charge storage mechanism, supercapacitors hold higher power density (15kW/kg) and much better cyclability ($>10^6$) as compared with batteries.

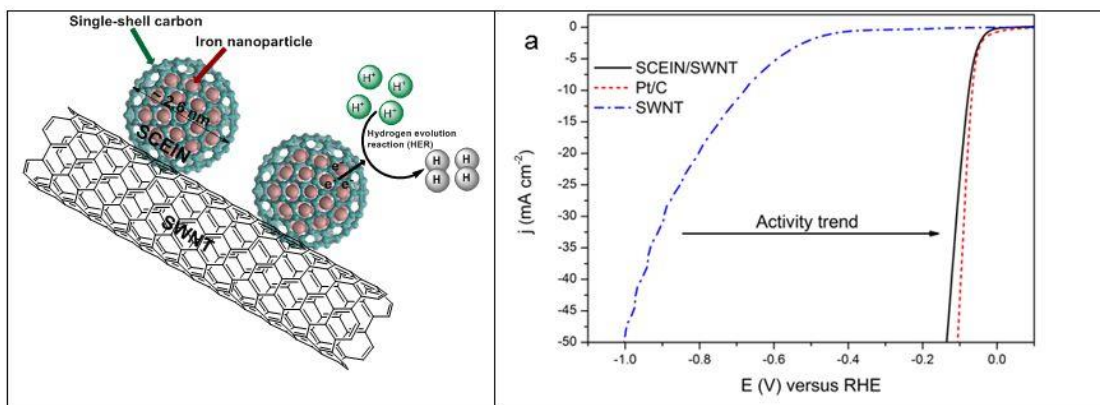
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Sustainable energy production with fuel cells

To meet the clean, low carbon footprint and resource-efficient energy production challenges, fuel cells provide an unsurpassed opportunity to cut harmful greenhouse emissions, to increase energy security, and to improve primary energy conversion efficiency especially in decentralised energy production. However, in the fuel cell industry, inability to provide cost-efficiency, energy efficiency, and long lifetime simultaneously in the same system has been a major challenge and has prevented fuel cells from truly penetrating the market. The total life cycle cost, consisting of the investment cost, the operation and maintenance cost, and the fuel cost, defines the true market potential for a new energy production technology. The core of the fuel cell system is the stack, which has to address the key parameters of cost, efficiency and lifetime. Otherwise the system will not be self-sustaining on the market.

[Read more](#)



New hybrid electrode materials for energy storage

Aalto University Department of Chemistry has active research in developing new materials for electrochemical energy storage and conversion applications. Though the world has witnessed a boost in solar and wind based renewable energy production within the last ten to twenty years the storage of energy still reminds as an unsolved problem. Electrochemical energy storage is attractive because of its ability to respond fast on sudden changes in energy production and demand. However, high price is the major obstacle for adopting these convenient energy storage technologies. In Aalto University Department of Chemistry has ensemble of four professor focusing on development of new energy material. Profs. Tanja Kallio and Kari Laasonen have been working with electrocatalyst materials for fuel cells and electrolyzers whereas Profs. Maarit Karppinen and Antti Karttunen focus on novel layered inorganic organic material for various energy applications. Both the teams have one experimentalist and one computational expert which enable profound understanding and rational design of the new materials. Also common research interest between the teams is found.

[Read more](#)



NANO futures roadmap: addressing the barriers to the commercialization of nanotechnology

The final version of the NANOutures Implementation Roadmap for the valorisation of nano-enabled technologies, services and products, developed under Value4Nano project, was released in August 2015. Feel free to explore this document and extract relevant information for your organization about each of the four identified Value Chains, short- and medium-term actions proposed for the period 2015-2022, draft long-term actions (beyond 2022), pilot line actions, etc.

[Check out the Roadmap here](#)



Proceedings of the Society and Materials conference available soon on *Materiaux et Techniques*

There will be a special issue of *Matériaux et Techniques*, vol. 104, #1, 2016 (<http://www.mattech-journal.org/>), coming up soon, which will publish a selection of peer-reviewed papers from SAM-9, the 2015 edition held in Luxembourg last May.

SAM-10 papers will be published in English either in *Matériaux et Techniques* or in *Metallurgical Research and Technology* (<http://www.metallurgical-research.org/>), or in both, depending on the number of written papers which are accepted after peer-reviewing.

Five keynote lectures will be given at SAM-10 in Rome, by Marco Falzetti, Amilcare Collina, Enrico Benetto, Ernst Worrel and Jean-Pierre Birat.

communicating and disseminating innovative ideas on these topics.

[Read more](#)



FEMS Junior Euromat 2016

July 10-14, 2016, Lausanne, Switzerland

Lausanne and Junior Euromat is a symbiosis since the beginning of the conference in 1992, rendering it the major event for young materials scientists and engineers in Europe. Junior Euromat assembles every two years more than 300 Master and PhD students, Post docs and young scientists from all over the world. The 13th Junior Euromat conference is for the first time organized by the Ecole Polytechnique Fédérale de Lausanne, Materials Department, Powder Technology Laboratory in close collaboration with FEMS and will be held at EPFL from July 10 to 14, 2016. Also for the first time, the Scientific Committee and the Organising Committee are responsible for the content and structure of Junior Euromat, adding further value to this unique event.

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Editorial board members



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The MATCH project was initiated to strengthen and deepen the Alliance4Materials strategy with a further increased stakeholder network. The project is coordinated by Italian Centro Sviluppo Materiali and the whole consortium consists of 18 partners from nine countries representing the six related European Technology Platforms and several major European material research organisations.

The project started in January 2015 and will continue for 30 months until June 2017. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646031. [Read more](#)