

# Advanced materials for a sustainable future

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Global trends such as population growth, climate change, urbanization and an increasing demand for energy are major challenges to **future mobility concepts**. Energy management is a specific challenge for all the vehicles and **materials design** can be considered a key enabler of smart, green and integrated transport. This “green motoring” implies not only alternative propulsion systems but also lightweight materials to reduce the amount of energy needed to start the vehicle besides, performance improvements, operation costs optimization and flexibility. In this context, two examples of key technologies and materials are reviewed in detail. Lightweight materials as a replacement for existing solutions, are essential to improve the energy efficiency of many types of engineering equipment and systems in fields including energy production, transportation and construction. The combination of **cellular materials and nanotechnology** open new areas of opportunity to be explored. On the other side, materials for advanced battery technologies will impact how energy is used and stored at many levels from regional power distribution applications to improved sustainable mobility and new generation electronic consumer goods. One of the solutions to overcome energy density limitations based on **sulfur polymer carbon composites cathode is presented**.

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