Cover Profile
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Sulfur-Doped Carbon-Wrapped Heterogeneous Fe_3O_4/Fe_7S_8/C Nanoplates as Stable Anode for Lithium-Ion Batteries

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Invited for this month's cover picture is the group of Prof. Anqiang Pan at Central South University (P.R. China). The cover design is inspired by lotus petals and illustrates the morphology of the sulfur-doped carbon wrapped heterogeneous Fe_3O_4/Fe_7S_8/C nanoplates. The excellent electrochemical performance can be attributed to the carbonaceous porous nanoplates structure, smaller crystallites and binary boundaries of Fe_3O_4/Fe_7S_8/C. Read the full text of the Article at 10.1002/batt.201900134.

What is the most significant result of this study?

When utilized as anodes for LIBs, the heterogeneous Fe_3O_4/Fe_7S_8/C composite exhibits superior lithium ion storage properties to Fe_3O_4/C and Fe_7S_8/C nanoplates. The results demonstrate that rational structural design and binary phase engineering can effectively improve the electrochemical performance of the anode materials for LIBs. The strategy can be potentially applied to other metal oxide/metal sulfide composite phases or even bimetallic sulfides and bimetal oxides for high performance lithium-ion batteries.

What was the inspiration for this cover design?

The cover design was inspired by lotus petals. Carbon-coated heterogeneous Fe_3O_4/Fe_7S_8/C nanoplates are like lotus petals and nanoplates stacked together are like lotus, as could be seen in the SEM. This image highlights the structure and binary boundary of the carbonaceous porous nanoplates of the Fe_3O_4/Fe_7S_8/C. The uniform sulfur-doped carbon coating layer can improve the electronic conductivity and structural stability of the composite.

Who contributed to the idea behind the cover?

The inspiration for the cover design was discussed by Mr. Kang Chen, Dr. Xiangzhong Kong and Prof. Anqiang Pan. We artistically modified the morphology of carbon-coated heterogeneous Fe_3O_4/Fe_7S_8/C nanoplates to get the idea of lotus petals.