

Sub-diffraction Imaging of Energy Conversion Reactions on Graphene

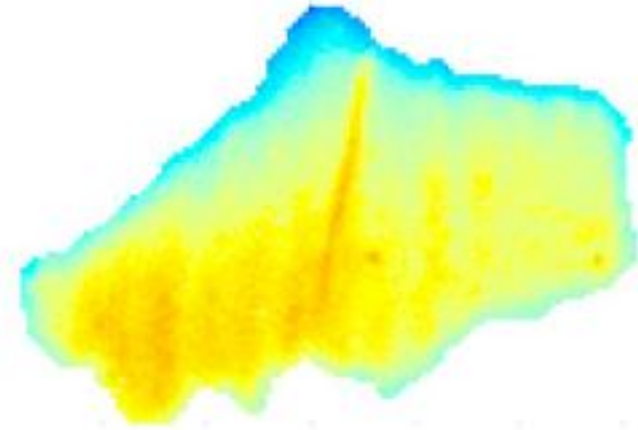
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Graphene and the related graphene oxide (GO) are attractive catalytic materials for electro-conversion reactions.

The objective of our research is to develop a fluorescence microscopy approach to image electrocatalytic reaction on single graphene/GO sheets down to the single-molecule level and sub-diffraction resolution, so as to define their activity-structure correlation for guiding their applications and tailoring them for better performances.

We have been able to use a probe fluorogenic reaction and map the electrocatalytic activity on single GO sheets (top image). On this activity map many fine featured are resolved and can be correlated with boundary, winkle, and folded regions, as well as presumably different structural domains, which behave differentially under electrocatalytic conditions (bottom image).

Electrocatalytic activity map



Activity domains

