

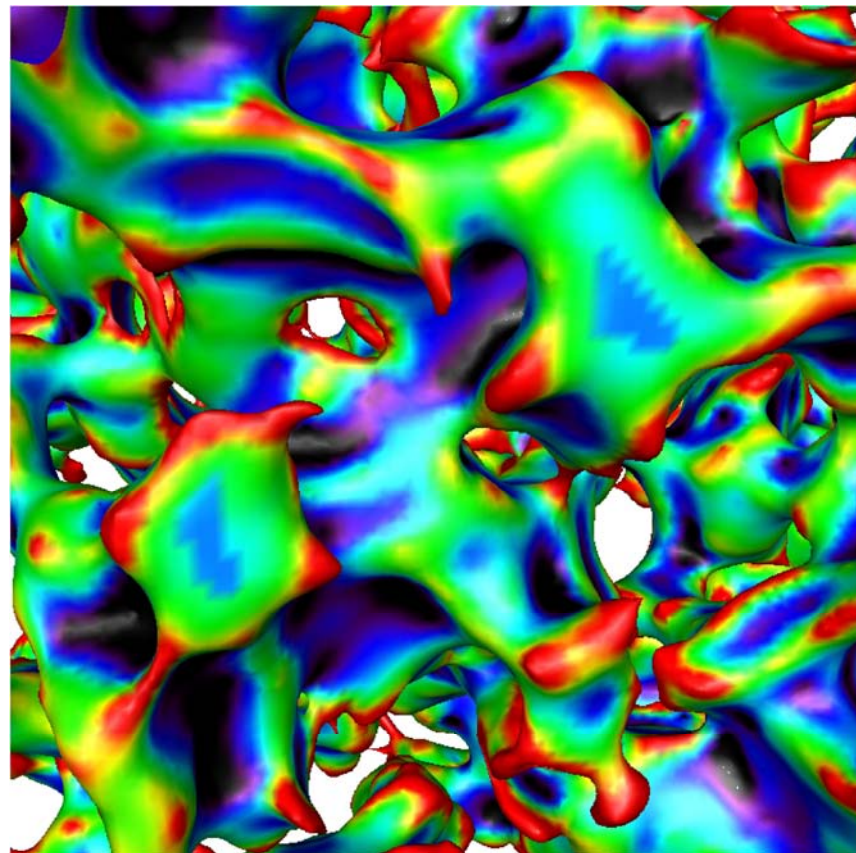
New Methods For Imaging Fuel Cells

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In this project, new methods are being developed for imaging and characterizing fuel cell electrodes. The image at right illustrates the morphology of the Ni phase in a porous Ni-ZrO₂ composite, commonly used as the anode (fuel electrode) in solid oxide fuel cells. These devices are being developed for clean and efficient electricity generation, and also have potential applications for energy storage.

The structural information is providing new insights into the factors controlling the electrochemical performance of these electrodes, and hence the fuel cell as a whole. Further, it is allowing us to begin understanding the fuel cell's long-term endurance.

The methods developed in this project are now being adopted by several groups around the world. The structural data is being made available for use by modelers.



Plot showing the Ni surfaces in the anode of a solid oxide fuel cell, with the superimposed colors showing the degree of surface curvature, from high (red) to low (violet).