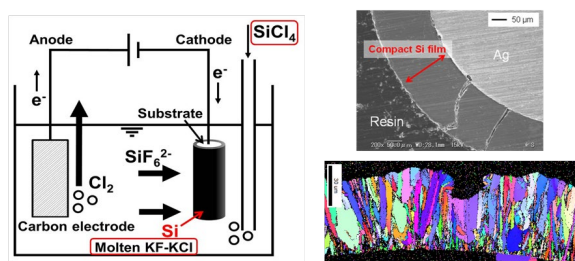
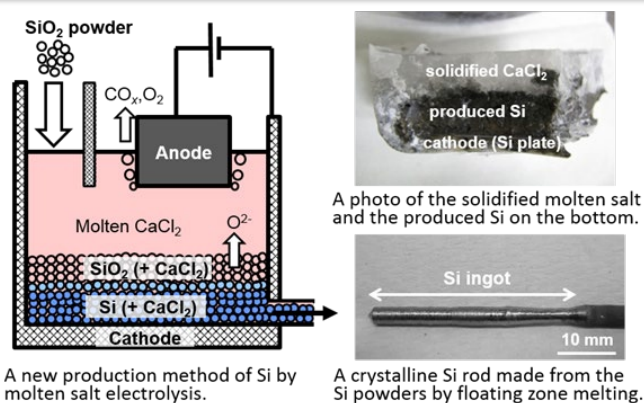


Research Information

PI Name : Toshiyuki NOHIRA
 Position : Professor
 E-mail : nohira.toshiyuki.8r@kyoto-u.ac.jp
 Staff: Associate Prof. Tsutomu KODAKI
 Staff: Assistant Prof. Takayuki YAMAMOTO
 Research Field

We are studying materials and systems to realize renewable energies like photovoltaics and bioenergy as the major primary energy source for human beings. We are conducting innovative researches that cover the phases from basic research to applications mainly based on electrochemistry and biochemistry.

Research Activities



A new production method of silicon films for solar cells by the molten salt electroplating

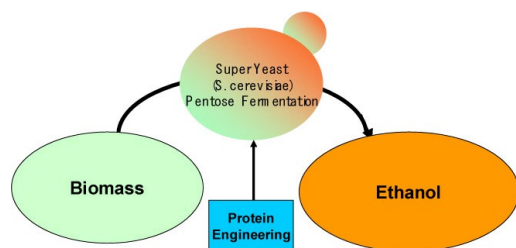
We have proposed a new production method of crystalline silicon films by electroplating in molten KF-KCl (left). An SEM image of the crystalline silicon film electroplated on a silver wire (top right). An EBSD image of the electroplated silicon film showing its high crystallinity (bottom right).

A new production method of solar-grade silicon by the electrochemical reduction of silica in molten salt

We have proposed a new production method of silicon which utilizes electrochemical reduction of powdery SiO_2 in molten CaCl_2 (left). A photo of the sample obtained in the principle verification experiment (top right). A photo of the crystalline silicon rod prepared from the electrochemically produced silicon powder by a floating zone method (bottom right).

Highly efficient energy production from biomass

The more efficient use of biomass is demanded to solve the global crises such as exhaustion of fossil fuel and global warming. We focus on the highly efficient production of ethanol from biomass using genetic engineering (right).



Comments

We are looking for new students who have a strong desire to pursue advanced research to solve energy and environmental problems through research work in the fields of electrochemistry and biochemistry.

<http://www.iae.kyoto-u.ac.jp/chemical/en/index.html>