Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Porous Silicon Applications for Photovoltaic Solar Cell Devices[1]
GULSEN KOSOGLU, MEHMET YUMAK, UGUR DINC, OZHAN OZATAY, YANI SKARLATOS, CARLOS CARCIA CARCIA, Bogazici University Physics Department — The photovoltaic industry searches for low cost, energy competitive solar cell modules, and the usual material used is crystalline silicon, which has been covering 90% of the solar module market for a long time. Porous silicon (P-Si) is used in photovoltaic applications as an ultra efficient anti-reflection coating, while a graded layer with an expanded band gap offers increased absorption in the visible spectrum regions. We have built P-Si solar cell devices having considered different physical Si wafer parameters such as crystal orientation, resistivity, and doping levels; which crucially affect the device efficiency. Porous Si wafers, prepared after etching crystalline silicon in high HF concentrations, exhibit fluorescence in the purple wavelength region of the visible spectrum under UV illumination. We are now in the process of improving the efficiency of the device by modulating the structure of the P-Si wafer, and studying its photovoltaic characteristics.

[1]Bogazici University Research Funding:5782 TUBITAK Grand Funding:209T099 Bogazici University Infrared Funding:6121

Gulsen Kosoglu
Bogazici University Physics Department

Date submitted: 23 Jan 2012 Electronic form version 1.4