Application of Colloidal Lithography for Micro/Nano Surface Structuring

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INTRODUCTION

Micro technology has many applications within the cleantech area. Well known examples are micro fabricated solar cells relying on silicon substrates and fabrication technologies. Such systems have been in use for many years and currently the number of systems in use in Denmark is increasing rapidly.

However, micro and nano technology can help overcome the future challenges in many other different ways. Sensing systems can increase the output of wind turbines and sensors of different kinds can help to save energy. Small Lab-on a chip devices can perform environmental analysis and detect pesticides. Other applications are energy harvesting from vibrations, which can provide energy to embedded sensing systems that can help save energy or monitor for example the conditions of wind turbines.

TOPICS ADDRESSED

This project is the collected effort from four courses at DTU Nanotech:

- 33471 Nano-3W: Experimental Micro- and Nanotechnology
- 33470 Mikro-3W: Experimental Semiconductor Technology
- 33435 LabChip-3W: Experimental Work on Lab-on-a-chip Systems
- 33422 Nanolithography

The topics addressed are:

- Carbon nanotube based system for environmental analysis
- Lab-on a chip device for pesticide detection using gold nanoparticles
- Inorganic electrets for energy harvesting devices
- Application of Colloidal Lithography for Micro-/Nano Surface Structuring
- Use of electron beam and nanoimprint lithography for cleantech

RESULTS

As the projects will be carried out in June 2012 the results cannot be presented yet. However, the results will demonstrate how useful and versatile micro and nanotechnology is.