Novel III-V compound semiconductors and semiconductor nanostructures

Novel III-V compound semiconductors and semiconductor nanostructures for optical and electronical devices

The aim of the research is to provide new high-purity III-V semiconductors by atomic-scale epitaxial and etching techniques. The fields of application concerning the compound semiconductor and nanotechnology based devices include the various LED and laser structures, quantum wire lasers, as well as detectors. The research is supported by various characterisation methods, i.e. Scanning Electron Microscopy (SEM), Energy-Dispersive X-Ray Spectroscopy (EDS), X-Ray Diffractometry (XRD), Auger Electron Spectroscopy (AES), Photoluminescence (PL), Hall Effect Measurement, Secondary Ion Mass Spectroscopy (SIMS).

Tribological simulations – Friction models

Regarding the combustion engines, one of the most critical as well as the most essential current problems is the fuel consumption, which is considered as the primary field of emission reduction. The primary opportunity for an emission reduction can be searched directly at the engine, where the friction losses can be reduced due to the 40-50% responsibility of the piston ring assembly – such as piston, piston rings, and cylinder wall. The reduction of the friction at these components has key importance, because it has a direct influence on wear – as well as have a further effect on the fuel consumption, which determines emission. The aim of the research is to provide models based on the correlations of the friction and wear systems.

RFID and biometrics identification technologies

The aim of the work is to search for new applications of radio-frequency identification systems, as well as improve biometrics identification and their integration for industrial applications.

Contact person: Dr. Zsebők Ottó PhD associate professor Contact information: E-mail: zsebok @ sze.hu, Telephone: +36 96 613-548

References: