

## PREDAVANJE

srijeda, 29. siječanj 2014. u 13:15 sati

Predavonica P2, Tehnički fakultet Sveučilišta u Rijeci, Vukovarska 58, Rijeka

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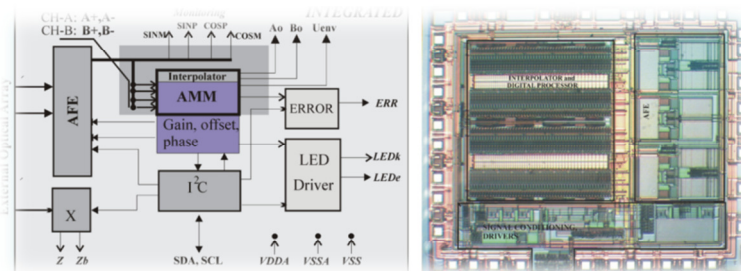
Integrirani optički sustavi na čipu (OSoC)

### FULLY INTEGRATED OPTICAL SYSTEMs on CHIP - OSoC

Integrirani optični sistemi na čipu (OSoC)

The following topics will be covered:

- IC design and technologies,
- Sensors on Silicon (Chemical, IR, Opto, Magnetic, Contact-less sensors, MM wave detectors, MM wave sources),
- Systems SoC design composed of Capacitive systems, Magnetic systems, Wireless sensors network and RFID Technology and Optical encoders which will be discussed in detail and includes the EM waves basic theory, integrated optical sensors and principle of operation of the angular and linear optical-based position encoders.



A typical application in the motion control field is in magnetic or optical linear and rotary encoders, the major part of which comprises integrated electronics. In general, the electronics comprise an opto-sensing area or hall sensors structure, analog front-end and signal conditioning, a fast interpolator and a digital signal processing unit. The front-end performs sensor supply, sensor excitation and signal magnification functions. The operation speed of the encoders, based on magnetic sensors, is usually much slower than one based on light modulation. This holds true mainly for magnetic rotary encoders, the speed of the magnetic linear encoders being faster, but usually never exceeding the speed of optical encoders.

**Dr. Anton Pletersek** is currently with FE, department of microelectronics LMFE in University of Ljubljana and with the ams R&D in Ljubljana. His research interests include mixed-signal ASIC design, device physics related to submicron devices and integrated silicon based sensors and sensory processing in CMOS and BiCMOS technologies. He has authored numerous journal articles (Journal of Solid-State Circuit - IEEE, Electron Eng., Analog Integrated Circuit and Signal Processing - Springs publisher, Inf. MIDEM, Bentham Science, etc.). He holds 14 patents and is coauthor of the first Slovenian patent numbered #00001. He is an author of the design book titled *Design of Analog Integrated Circuit in CMOS and BiCMOS technology*. He is currently Associate Professor for the Microelectronics System Integration at the FE, Ljubljana and for Integrated Circuits in FERI Maribor. He was a co-founder of the IDS-microchip company, now *ams R&D* where he is managing a system ASSP designs.

**Dr. Anton Pleteršek** received for his work numerous Awards, one of them is a National Award for the best innovations for the year 2010 (CCIS's Award for best Innovation) granted by *Chamber of Commerce and Industry of Slovenia*.

**Dr. Anton Pleteršek** je zaposlen u laboratoriju za Mikroelektroniko na FE, Univerza v Ljubljani. Njegova specialnost je razvoj i projektiranje miješanih (mixed-signal) integriranih sklopova, istraživanje nanometarskih tehnologija i razvoj senzora na siliciju u tehnologijama CMOS i BiCMOS. Publicirao je niz članaka u međunarodnim časopisima, kao što su JSSC, Electron Eng., Analog Integrated Circuit and Signal Processing - Springs, Inf. MIDEM, Bentham Science, etc. Ima 14 podijeljenih patenta i koautor je prvog slovenskog patenta s brojem #000001. Također je autor knjige s naslovom "*Načrtovanje analognih integriranih vezij v tehnologijah CMOS in BiCMOS*", prve knjige sa tovrstnim sadržajem na slovenskom jeziku. Trenutno predaje Integrirane mikrosustave kao izvanredni profesor na FE u Ljubljani i Integrirane sklopove na FERI u Mariboru. Dr. Pleteršek je suosnivač visokotehnološke tvrtke IDS, sada ams R&D, gdje vodi projektiranje sklopova ASSP.

**Dr. Anton Pleteršek** je sa svojom istraživačkom skupinom dobio zlatno nacionalno priznanje za godinu 2010, kojeg dodjeljuje Gospodarska zbornica Slovenije za najbolje inovacije.

**Dr. Anton Pleteršek** je trenutno zaposlen v laboratoriju za Mikroelektroniko na FE, Univerza v Ljubljani. Njegova specialnost je razvoj in načrtovanje mešanih (mixed-signal) integriranih vezij, raziskave nanometrskih tehnologij in razvoj senzorjev na siliciju v tehnologijah CMOS in BiCMOS. Publiciral je vrsto članov v mednarodnih revijah, kot so JSSC, Electron Eng., Analog Integrated Circuit and Signal Processing - Springs, Inf. MIDEM, Bentham Science, etc. Ima 14 podeljenih patentov in je soavtor prvega slovenskega patenta s številko #000001. Je tudi autor knjige z naslovom "*Načrtovanje analognih integriranih vezij v tehnologijah CMOS in BiCMOS*", prve knjige s tovrstno vsebino v slovenskem jeziku. Trenutno predava Integrirane mikrosisteme kot izredni profesor na FE v Ljubljani in Integrirana vezja na FERI v Mariboru. Dr. Pleteršek je soustanovitelj visokotehnološkega podjetja IDS, sedaj ams R&D, kjer vodi načrtovanje vezij ASSP.

**Dr. Anton Pleteršek** je s svojo raziskovalno skupino dobil zlato nacionalno priznanje za leto 2010, ki ga podeljuje Gospodarska zbornica Slovenije za najboljše inovacije.