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SAFMAT – Center for Analysis of Functional Materials

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Materials for applications of terahertz field of spectrum

(T. Gavenda, V. Křesálek)264

This article's task is to bring information about building of optical laboratory at Tomas Bata University in Zlin to Czech research and scientific community. This optical laboratory continues on the work of Laboratory of terahertz spectroscopy at the Institute of Physics, Academy of Sciences of the Czech Republic in Prague. The optical laboratory in Zlin will concentrate on studying materials used for manufacturing optical elements for forming of terahertz beam, with focus on polymers which are a traditional area of research in Zlin.

Keywords: terahertz range of spectrum, polymers, terahertz optics for applications

Application of Program Wils 6.3 for Artificial Lighting

Calculation (M. Vašina)267

This paper deals with artificial lighting calculation in interiors by means of the computer program Wils 6.3. The distribution of illuminance and glare factor for a given room was investigated at different conditions (e. g. at change of number and location of luminaries, colour of single walls, location of impediment to the room etc.). A relatively fast calculation of light quantities at change of specific input parameters belongs to advantages of these simulations.

Keywords: simulation, computer program Wils 6.3, illuminance, glare factor, reflectance.

Specific quantities and mathematical relations of radar signal processing theory

(J. Pospíšil, F. Pluháček)270

Optical interference profilometers

(F. Klein)272

The subject of this article is to provide a basic information on technical solutions of WLSI profilometers, their basic parts and their mutual interrelations, including warnings of possible misinterpretation or due to commercial reasons unclear to incorrect information provided by the manufacturer. At the conclusion of the article WLSI profilometers are sorted into three generations according to their key metrological characteristics.

MESING also presented co-operation with Meopta – optika at the International Engineering Fair 2011 in Brno

(J. Nevřala)275

In the MESING exhibition stand (International Engineering Fair 2011 in Brno) a discussion was hold with Ing. Jan Kůr, MESING's executive director, about trends in engineering metrology, displayed technological innovations and also useful co-operation with Meopta – optika.

Ing. Zdeněk Martínek – Czech watchmaking doyen in his ninetieth

(L. Hovorka)277

ELEKTROTECHNIKA 2011

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Seventh International Conference Photonics Prague 2011

(P. Tománek)278

Czech and Slovak Society for Photonics organised its 7th conference Photonics Prague dealing with Photonics, Devices and Systems. The Conference was held on August 24-26, 2011 in Artemis Olympik hotel in Prague. 97 participants from 24 countries answered to the invitation of Organizing and Program Committees.

The excellent and exciting 4 plenary talks were followed by successful eleven sessions (with 29 invited, 78 oral and 51 posters presentations) on various aspects of Photonics. SPIE Best student presentation Awards have been distributed among four winners, and CSSF Award received ex-aequo two young Czech scientists.

Second seminary of Optonika, Brno Exhibition Centre,

29 – 31 March, 2011 (P. Tománek)279

Off-grid Photovoltaic System for Illumination

(M. Libra, P. Sedláček, J. Mareš, V. Poulek)280

The small off-grid photovoltaic system for illumination was constructed and tested at the Czech University of Life Science in Prague. Light source with LED was used. Description of the PV system and first results are presented in this paper.

Software for laser scanner SICK LMS 400

(P. Neckář)282

The aim of this software is testing characters for Laser scanner SICK LMS 400. Software will be used for functional part of control Autonomic Mobile Robotic System.

Software tool usage for heat transfer simulation

(M. Zálešák, V. Gerlich)285

Energy consumption in buildings in EU is app. 40% of the total consumption. Due to an effort to decrease energy consumption, the attention is paid to the energy consumption on building sector and related energy saving measures, as well. The obvious measure is to increase thermal insulation properties of buildings envelopes, however nowadays buildings are reaching the economically proved limit. The one of possible ways to further decrease energy consumption for heating/cooling of buildings is to optimise the energy supply strictly per time schedule. This concept requires the necessity to consider of thermal accumulative properties of buildings as well. There are presented several computed methods and tools for heat transfer calculation as well as building simulation.

Key words: heat transfer, building simulation, numerical modelling

Binarization of computer generated holograms using dithering

noise (P. Lobaz, L. Kovář)290

The article discusses the display of computer generated holograms of 3D objects using a binary amplitude spatial light modulator. More precisely, it deals with binarization of a diffractive structure using dithering noise. It concludes that the dithering method is suitable for simple diffractive structures such as diffractive gratings, but fails to provide a good binarization of computer generated holograms of 3D objects.

Key words: diffraction, diffraction grating, computer generated hologram, binarization, dithering

The Science and Technology Park has achieved another record at national level

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ANOTACE

Akustická emise generovaná elektromagnetickým polem

(J. Dvořák)288

Článek se zabývá výzkumem akustické emise generované pomocí elektromagnetického pole. V experimentech se měří velikost mechanické odezvy akustické emise (mechanických vln) na budící proud z generátoru. Výchylka povrchu byla snímána laserovým interferometrem, byla registrována přítomná povrchová vlna. Maximální amplituda výchylky je 8 nm při amplitudě budícího proudu 120 mA.

Klíčová slova: akustická emise, Rayleighova vlna, šum, senzor