Звено *Електромагнитни сензори*

Звено *Електромагнитни сензори* се занимава с изследване на взаимодействие електромагнитно поле – материя. Получените оригинални резултати са групирани под названието *Surface photo charge effect (SPCE).* Неговата дефиниция е: при взаимодействие на всяко тяло с електромагнитно поле се наблюдава променлив електрически сигнал, който е с честота, еднаква с честотатана падащото лъчение. **Измерването е експресно и безконтактно. Важна особеност на SPCE е, че генерираният сигнал е специфичен за всеки образец и се променя ако образеца се промени. Това дава големи възможности за експресно и безконтактно изследване на твърди тела, течности и газове.** Някои от възможностите за идустриално приложение, разработени до сега са за контрол на: полупроводници, керамични изделия, качеството на мляко, неравномерности по повърхност, октаново число на бензин, откриване на фалшиви монети, отлагане на варовик по тръби и др.
В момента, в рамките на международен консорциум, звеното работи по европейски проект по програма „Сигурност" на FP 7 с акроним COUNTERFOG. Целта е създаване на системи за защита на публични обекти при терористични атаки с оръжия за масово поразяване, промишлени аварии, бедствия и др. Консорциума се състои от 10 участника от различни европейски държави. Задачите на нашия екип са разработка на сензорите и уредите, които да управляват системите за ликвидиране на последствията.

Доц. Огнян Иванов

Почетен член на The Optical Society of America

Ръководител на Звено Електромагнитни сензори

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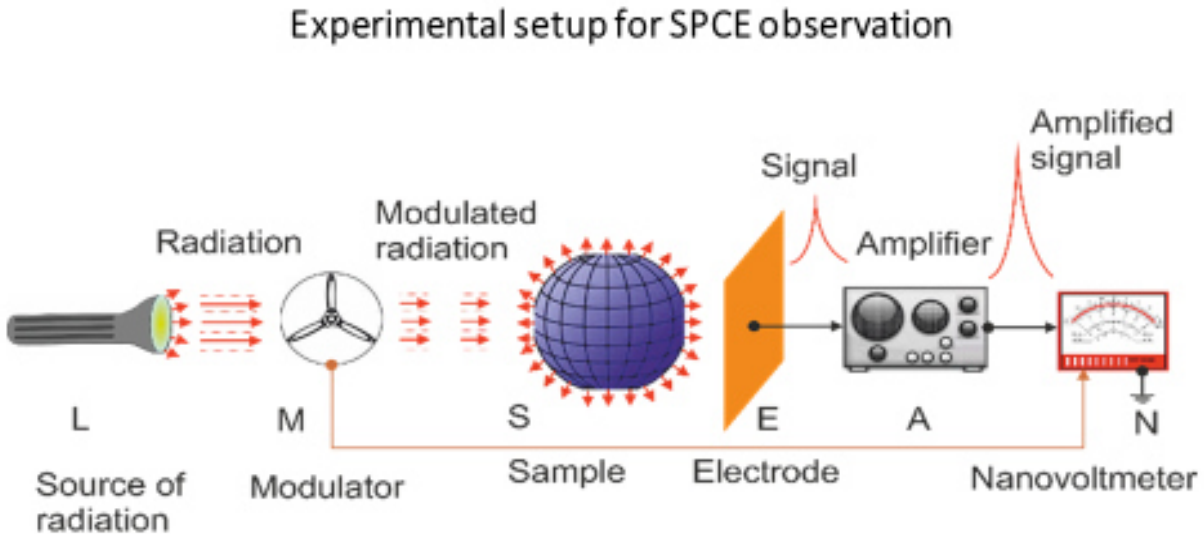
Експериментална система



L - light source; M - opto-mechanical modulator; S - measuring structure; E – electrode; A - high impedance amplifier; N - lock-in nanovoltmeter;

Изследователска и иновационна дейност

BULGARIAN
NATIONAL BANK
ISSUE DEPARTMENT
Cash Directorate

August 7th, 2003

Today, August 7th 2003, at the Institute of Solid State Physics, Bulgarian Academy of Sciences, a newly created device for detection of counterfeit coins, based on irradiation with electro-magnetic field, was demonstrated. The demonstration was carried out in the presence of both Mrs. Ines Lazarova - Expert in commemorative and circulating coins, Bulgarian National Bank and Mrs. Petya Krasteva - Expert, Bulgarian National Bank. Bulgarian coins with a face value of 50 st. were tested. Several series, consisting of 10 to 15 coins were measured. Each of the above series contained arbitrary, unknown to the demonstrator, number of genuine and fake pieces. The results of the tests revealed 100 % identification of the counterfeits. The experts pointed out that the tested system was not ready for commercial applications, but the demonstration showed the possibility to create a device, based on this principle. Some suggestions, regarding the measurement procedures and the design were also made.

Demonstrator: .....
/Assoc. Prof. Ognyan Ivanov, PhD/

Experts: 1.....
/Mrs. Ines Lazarova, Bulgarian National Bank/

2. .....
/Mrs. Petya Krasteva, Bulgarian National Bank/

1, Alexander Battenberg Square, 1000 Sofia, Bulgaria
Telex 24091; Fax /+359 2/ 9816602; Phone /+359 2/ 9145 13 49, 9145 15 05

Way to the 21ST Century

EAST-WEST EURO INTELLECT - BULGARIA

Exhibition for transfer of intellectual products and selling of goods

Diploma

EAST-WEST EURO INTELLECT

GOLD MEDAL

presented to

Ognyan Ivanov

in recognition of the display of

LEVEL METER FOR LIQUIDS

Sofia - Bulgaria

Chairman of the International Jury

EWEI – SOFIA– 2005

Dr. Sia Mednikarova
President of "EWEI" and the Exhibition Committee

INERGY
AUTOMOTIVE SYSTEMS

Report

On 01.08.2005 a demonstration was made of operative model of a fuel level-meter, developed by Assoc. Prof. Ognyan Ivanov, PhD. Volodia Naydenov, representative of the firm Inergy Automotive Systems (Belgium) was present at the demonstration.

The device was ascertained to be working in conformity with the requirements. An agreement was achieved that it is necessary to continue the research in order to create new models and prototypes of fuel level-meters with definite parameters.

Attended the demonstration:

/ Dr. Eng. V. Naydenov /

СЪЮЗ на ИЗОБРЕТАТЕЛИТЕ в БЪЛГАРИЯ

ДИПЛОМ

издава се на

Огнян Иванов и Живко Стоянов

за присъждане на «Почетен медал» за успешно представяне на разработката

«Сензор за качествен контрол на входящи суровини»

в четвъртото

ИЗЛОЖЕНИЕ

ИЗОБРЕТЕНИЯ * ТЕХНОЛОГИИ * ИНОВАЦИИ

ИТИ'2012

София, 08–10.11.2012 г.

Марио Христов
Председател

09.11.2012г.

Проект COUNTERFOG

COUNTERFOG

DEVICE FOR LARGE SCALE FOG DECONTAMINATION

Objectives: The project aims at establishing systems for coverage of terrorist attacks with weapons of mass destruction - chemical, biological and radioactive. The task of ISSP is to develop sensors and devices, by means of which to operate these systems. For this purpose, we are working on a series of devices with different functions.

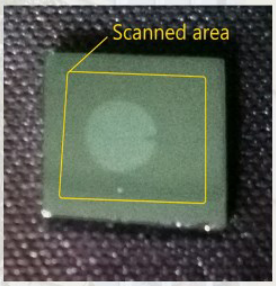
Working principles:

Created working devices, mainly based on original results obtained in ISSP, merged under the name Surface Photo-Charge Effect (SPCE) - the interaction of any solid with electromagnetic field induces an electric, alternating potential difference with the same frequency as the frequency of the incident field. The measurement is contactless and fast. An important feature of the SPCE is its significant dependence on the specific properties of the irradiated sample. This fact reveals vast opportunities for rapid and contactless analysis of solids, liquids and gases.

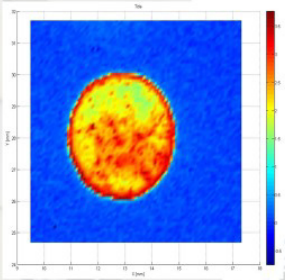
Examples of devices created by the project:

- A scanning system for sensitive specimens used in sensors

It is very important to choose correctly the exact point in which the laser beam illuminates the solid – fuid interface of the sensor. This choice defines the sensitivity of the sensor to fog influence. Due to the aforementioned reasons we initiated the creation of a system for automated scanning of wafer specimens. It finds SPCE-sensitive spots on various solid surfaces.

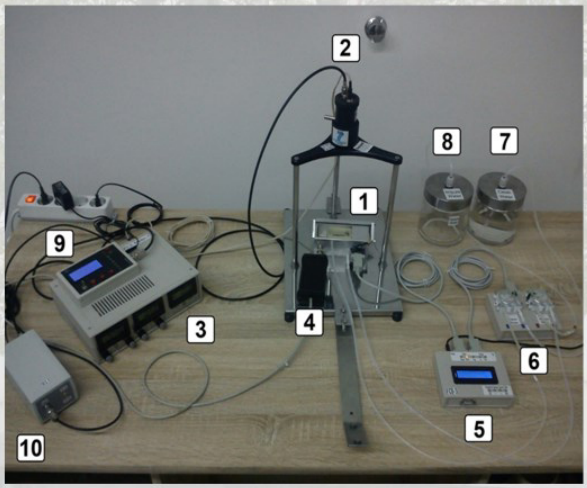


The specimen being scanned

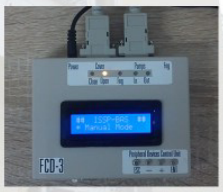


Proof of concept scan over a known ion implanted area of a specimen

- System designed for evaluation of fog contamination and detection of dispersed agents.

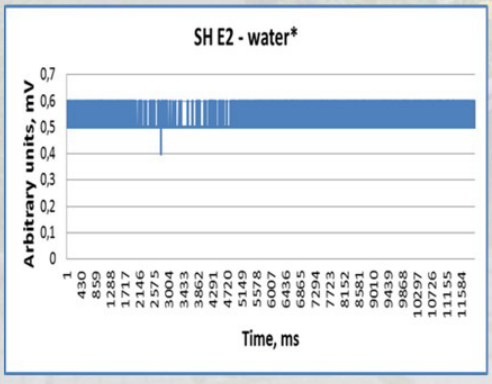


- Apparatus for controlling the movement of fluids

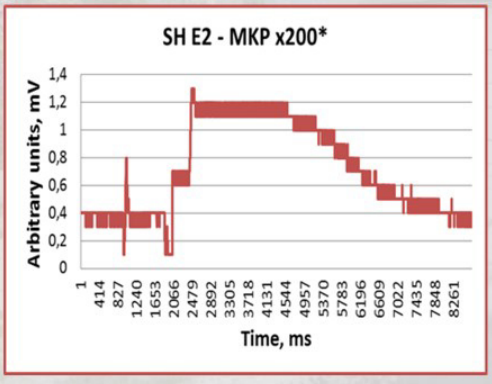


- Device for records and visualises the maximum signal amplitude (and respectively fog intensity) reached during a period of time.

Results of measurement of clean and polluted fog



Pure fog



Fog with contaminator – concentration 0.14 M