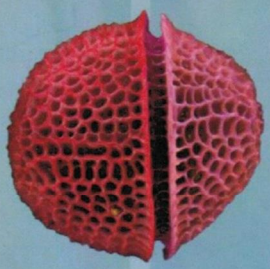
3RD CROATIAN MICROSCOPY CONGRESS

WITH INTERNATIONAL PARTICIPATION

April 26–29, 2015
Zadar, Croatia



PROCEEDINGS

11:50-12:30 SELECTED LECTURES / PARALLEL SESSIONS

LIFE SCIENCE (Lecture hall 1)	MATERIAL SCIENCE (Lecture hall 2)
Suzana Šegota Nanoparticle clustering within lipid membranes induced by surrounding medium. nanomechanical and thermotropic study on model lipid membranes	**Milivoj Plodinec:** Increased photoconductivity in BaTiO3/TiO2 composites
Vida Čadež: Biomineral structures of aragonite in marine mollusks at the nanoscale: FESEM and AFM studies	**Igor Djerdj:** Novel mixed phase sno2 nanorods for enhancing gas-sensing performance towards isopropanol gas

12:30-13:30 LUNCH BREAK

13:30-14:10 EQUIPMENT PRESENTATION (Lecture hall 1)

INEL / LEICA

MIKRO+POLO

14:20-15:20 INVITED LECTURES / PARALLEL SESSIONS

LIFE SCIENCE (Lecture hall 1)	MATERIAL SCIENCE (Lecture hall 2)
Eva Bártová: Confocal microscopy and DNA repair studies in living cells	**Mariana Klementová:** What can electron diffraction tomography do for you?
Sonja Levanat: Imaging the Hh-Gli signaling network in various tumor types	**Shunsuke Muto** Quantitative element/site-selective microanalysis using high-angular resolution electron channeled x-ray/electron spectroscopy

15:20-15:40 EQUIPMENT PRESENTATION / PARALLEL SESSIONS

LIFE SCIENCE (Lecture hall 1)	MATERIAL SCIENCE (Lecture hall 2)
SCAN / JEOL	**SCAN / JEOL**

Confocal microscopy and DNA repair studies in living cells

Eva Bartova (1)

1) Institute of Biophysics, Academy of Sciences of the Czech Republic, v.v.i.. Královopolská 135 612 65 Brno Czech Republic

Keywords: Confocal microscopy, DNA repair, FRAP, FRET, living cells

The maintenance of genome integrity is fundamental for proper cellular functions. Cells are continuously exposed to genotoxic factors, including UV irradiation or oxidative stress induced by pollutants. Therefore, appropriate DNA repair is more than demanding for genome stability. Genotoxic stress generally leads to induction of DNA lesions that must be repaired in order to avoid deleterious chromosomal translocations. Therefore, in irradiated chromatin of living cells we analyze kinetics and appearance of proteins, involved in DNA repair pathways or proteins recognizing the changes in radiation-caused chromatin conformation. For induction of DNA lesions we are using various sources of radiation, including UVA lasers or gamma-rays. From the view of various types of DNA lesions, by confocal microscopy, we study cell cycle dependent recruitment of selected proteins at radiation-damaged chromatin. We apply local micro-irradiation by 355-nm or 405-nm UVA lasers in order to induce DNA lesions, positive on cyclobutane pyrimidine dimers (CPDs) or phosphorylated histone H2AX (Fig. 1). Our aim is also to study protein-protein or protein-DNA interactions by FRET analysis or protein kinetics by FRAP and bioinformatics approaches. Work was supported by Grant Agency of the Czech Republic, project No.: 13-07822S.

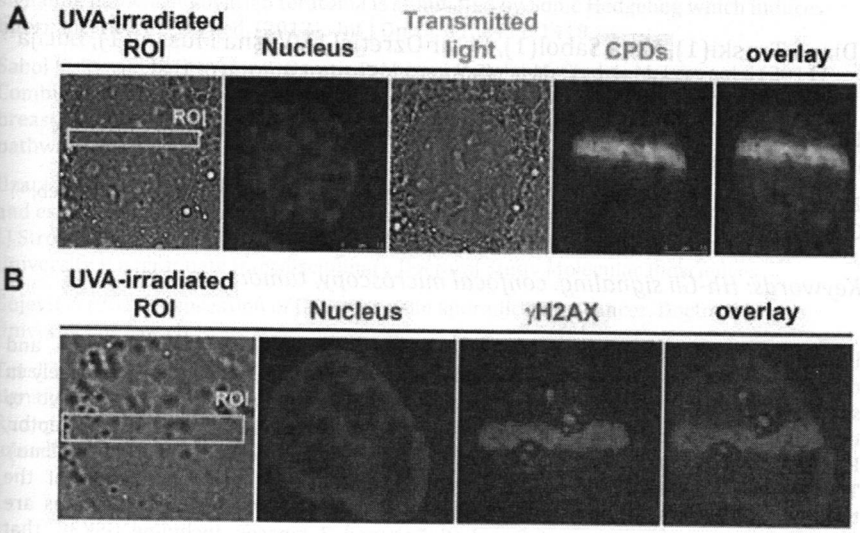


Figure 1. DNA lesions positive on CPDs (A) and gammaH2AX (B). DNA lesions in regions of interest (ROIs) were induced by UVA lasers.