



Head

Zbigniew Brzózka

Staff

Michał Chudy
Artur Dybko
Ilona Grabowska-Jadach
Elżbieta Jastrzębska

Current PhD students

Sameer Deshmukh
Maja Haczyk
Radosław Kwapiszewski
Agnieszka Michalczuk
Karolina Maciejewska
Katarzyna Tokarska
Ewelina Tomecka
Kamil Żukowski

Former PhD students

Alicja Filipowicz-Szymańska
Ilona Grabowska
Elżbieta Jędrych
Marcin Juchniewicz
Karina Kwapiszewska
Natalia Lewandowska
Joanna Łopacińska
Maciej Skolimowski
Dorota Stadnik
Iwona Wyzkiewicz

Current research

- Development of microfluidic systems for cell culture, migration, cytotoxicity tests and the evaluation of photodynamic therapy (PDT) procedures
- Investigations on microsystems for Multicellular Tumor Spheroid (MCTS) formation, culture and analysis; development of microfluidic-based in vivo-like cellular models for drug screening and toxicological tests
- Development of a microfluidic cardiac cell culture model
- Research on biological activity of quantum dots (QDs)
- Development and fabrication of microdevices with a contactless conductivity detector

Selected publications

Kwapiszewska K., Michalczuk A., Rybka M., Kwapiszewski R., Brzózka Z., *A Microfluidic-Based Platform for Tumour Spheroid Culture, Monitoring and Drug Screening, Lab on a Chip*, 14, 2096, 2014

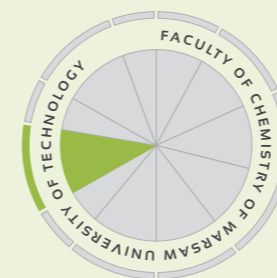
Kwapiszewski R., Szczudłowska J., Kwapiszewska K., Dybko A., Brzózka Z., *Effect of Downscaling on the Linearity Range of a Calibration Curve in Spectrofluorimetry*, Analytical and Bioanalytical Chemistry, 406, 4551, 2014

Jastrzębska E., Flis S., Rakowska A., Chudy M., Jastrzębski Z., Dybko A., Brzózka Z., *A Microfluidic System to Study the Cytotoxic Effect of Drugs: the Combined Effect of Celecoxib and 5-Fluorouracil on Normal and Cancer Cells*, Microchimica Acta, 180, 895, 2013

Ziółkowska K., Stelmachowska A., Kwapiszewski R., Chudy M., Dybko A., Brzózka Z., *Long-Term Three-Dimensional Cell Culture and Anticancer Drug Activity Evaluation in a Microfluidic Chip*, Biosensors and Bioelectronics, 40, 68, 2013

Jędrych E., Flis S., Sofinska K., Jastrzębski Z., Chudy M., Dybko A., Brzózka Z., *Evaluation of Cytotoxic Effect of 5-Fluorouracil on Human Carcinoma Cells in a Microfluidic System*, Sensors and Actuators B: Chemical, 160, 1544, 2011

Ziółkowska K., Kwapiszewski R., Brzózka Z., *Microfluidic Devices as Tools for Mimicking the In Vivo Environment*, New Journal of Chemistry, 35, 979, 2011



Research profile

Lab-on-a-chip for biological studies
Microfabrication technologies: soft lithography, replica molding, wet etching, micromilling
2D and 3D cell culture and analysis
Drug screening and toxicological tests
Analysis of intracellular enzymes
Microscopy imaging
Flow cytometry
Optical detection

Collaboration

Department of Pharmacy, University of Copenhagen (Denmark) – Jorg Peter Kutter
Department of Biomedical Engineering, Lund University (Sweden) – Thomas Laurell
Laboratory of Microsystems, École Polytechnique Fédérale de Lausanne (Switzerland) – Philippe Renaud
Department of Pharmacology, National Medicines Institute (Poland) – Zenon Jastrzebski
Faculty of Chemistry, Wrocław University of Technology (Poland) – Kazimiera Wilk

Scientific Awards

- 1st Degree Team Award of HM Rector of the Warsaw University of Technology for Scientific Achievements, 2013

Research equipment

- Scanning Electron Microscope Hitachi TM-1000
- Confocal Microscope Olympus FluoView FV10i
- Laser Measuring Microscope Olympus Lext OLS4000
- Flow Cytometer BD FACS Calibur
- CNC Micromilling Machine

