

**The 11th Torunian Carbon Symposium - Copernican revolution in  
carbon science (TCS 2024)**

**15-18.09.2024**

**Framework program of the conference**

**Sunday, 15.09.2024**

16:00 - 18:00 REGISTRATION (The University Hotel, 83A Szosa Chełmińska Street, Toruń)

17:00 - 18:00 SCIENTIFIC COMMITTEE MEETING

**All session will take place in the conference venue "Od Nowa"  
Academic Centre of Culture and Art (37A Gagarina Street, Toruń)**

## **Monday, 16.09.2024**

8:00 – 9:00 REGISTRATION

9:00 - 9:20 CONFERENCE OPENING

### **9:20 - 10:40 SESSION 1 New trends in carbon materials technology I**

**Chairman: prof. Aneta Frączek-Szczypta**

**9:20 - 10:10 PLENARY LECTURE I Maser W, Carbon nanostructures: Revolutionary objects for tackling real-world challenges.**

10:10 Just D, Selective sorting of single-wall carbon nanotubes using conjugated polymers in organic solvents

10:30 Pacuła A, Electrocatalysts, adsorbents for arsenic removal and components for polymer composite membranes based on pyrolytic carbon deposited on metals/metal oxides derived from hydrotalcite-like materials

10:50 - 11:20 COFFEE BREAK

### **11:20 - 13:10 SESSION 2 New trends in carbon materials technology II**

**Chairman: prof. Anna Boczkowska**

**11:20 - 11:50 KEYNOTE I Jurkiewicz K, Liszka B, Gancarz P, Walkowiak M, Smykała S, Talik E, Lamrani T, Nokielski P, Ilavsky J, Catalytic graphitization of non-graphitizing carbons**

11:50 Kopacz M, Szewczyk P, Długoń E, Stachewicz U, Electroconductivity enhancement of electrospun PVDF fibers by selective MWCNT electrophoretic deposition

12:10 Lorenc-Grabowska E, Potential of using spent magnetic carbonaceous adsorbents in blast furnace coke blends

12:30 Ślesiński A, Frąckowiak E, Electrolytic water disinfection and hydrogen production from real wastewater

12:50 Bulátkó A, Farkas A, Madarász J, Mohai M, Sebestyén Z, László K, Comparison of thermally and chemically reduced graphene oxide cryogels

13:10 - 14:30 LUNCH

### **14:30 - 16:00 SESSION 3 Carbon materials for energy conversion and storage I**

**Chairman: prof. Grażyna Gryglewicz**

**14:30 - 15:20 PLENARY LECTURE II Beguin F, Electrochemical energy storage with carbons**

15:20 Gajewska K, Enhanced energy density of nitrogen-doped reduced graphene oxide aerogel-based symmetric supercapacitor in aqueous electrolytes

15:40 Sroka S, Galek P, Menzel J, Fic K, Płatek-Mielczarek A, Fundamentals and implication of PZC determination for activated carbons in aqueous electrolytes for Electrochemical Quartz Crystal Microbalance (EQCM) applications

16:00 - 17:00 POSTER SESSION + COFFEE BREAK

19.00-21.00 TORUŃ TOUR

## Tuesday, 17.09.2024

### 9:00 - 10:40 SESSION 4 Carbon materials for energy conversion and storage II

Chairman: prof. Paweł Szroeder

9:00 - 9:50 PLENARY LECTURE III Morallon E, Carbon-based electrocatalysts for energy generation reactions

9:50 Frackowiak E, Klimek A, Matei Ghimbeu C, Tailoring the properties of salt-templated carbons for energy storage systems

10:10 Minta D, Gonzalez Z, Gryglewicz G, Diclofenac electrochemical detection: from modified glassy carbon electrode to miniaturized inkjet-printed setup

10:30 - 11:10 COFFEE BREAK

### 11:10 - 13:00 SESSION 5 Experimental, theoretical and modeling approaches to carbon materials

Chairman: prof. Mirosława Pawlyta

11:10 – 11:40 KEYNOTE II: Apicella B, Russo C, Tregrossi A, Cijolo A, Carbon as a pollutant and a nanomaterial: spectroscopic and chemical diagnostics for unveiling its structure

11:40 Kumar D, Białoruski M, Lagutko P, Piskorz W, Kotarba A, Functionalized Carbon Surfaces by Plasma: the Role of Surface Morphology

12:00 Lipták K, Czégény Z, Mohai M, Németh P, Szegedi, Truc T, András T, László K, Investigation on N-doped and N, S-dually doped resorcinol-formaldehyde carbon xerogels for fuel cell application

12:20 Furmaniak S, Gauden P, Błajet-Kosicka A, Kamedulski P, Sztylek M, Possibilities of using computer simulations and theoretical methods to model and explain adsorption phenomena on the example of adsorption of pyrrole, furan, and thiophene in the pores of activated carbons

12:40 Kurtulus S, Graphene and Borophene competing or plumbing to each other?

13:00 - 14:30 LUNCH

### 14:30 - 16:00 SESSION 6 Carbon materials for medicine and biology

Chairman: prof. Andrzej Kotarba

14:30 - 15:00 KEYNOTE III Kromka A, Engineered Diamond Surfaces & Heterostructures: Sensors for Environmental Monitoring and Life Science Applications

15:00 Wilk S, Medina-Cruz D, Zambrzycki M, Dziadek M, Webster T, Benko A, Surface chemistry of carbon nanotubes governs their biomedical applications

15:20 Stodolak-Zych E, The effect of carbon fiber morphology on the cellular response of cells in fibrous substrates for tissue engineering application

15:40 Nozdrenko D, Matvienko T, Motuziuk O, Gonchar O, Franskevych D, Nurishchenko N, Soroca V, Stetska V, Scharff P, Prylutsky Y, Post-traumatic correction of the mechanokinetics of skeletal muscle contraction by administering water-soluble C60 fullerene

16:00 – 16:30 COFFEE BREAK

**16:30-17:30 SESSION 7 Synthetic carbon and graphite used in industry**

**Chairman: prof. Sandra Paszkiewicz**

16:30 Gubernat M, Wielowski R, Szatkowski P, Szatkowska M, Kmita A, Jeleń P, Benko A, Zambrzycki M, Piekarczyk W, Frączek-Szczypta A, Study of the suitability of selected phenol-formaldehyde resins as precursors of carbon-carbon composite materials

16:50 Zambrzycki M, Gubernat M, Wielowski R, Piekarczyk W, Frączek-Szczypta A, Carbon-carbon composite rocket motor nozzles prepared by filament winding method

19:00 - 22:00 CONFERENCE DINNER (**Hotel Przystanek Toruń\*\*\* & Restauracja Lokomotywa, ul. Chłopickiego 4, 87-100 Toruń**)

## **Wednesday, 18.09.2024**

### **9:00 - 10:50 SESSION 8 Novel carbon structures and composites**

**Chairman: prof. Elżbieta Frąckowiak**

#### **9:00 - 9:50 PLENARY LECTURE IV Scharff P, Copernican revolution in carbon science**

9:50 Pawlyta M, Hard carbons and their application as anodes in Na-ion batteries

10:10 Szroeder P, Ziółkowski P, Sahalianov I, Tailoring electrocatalytic properties of sp<sup>2</sup>-bonded carbon nanoforms by doping

10:30 – 11:00 COFFEE BREAK

### **11:00 - 12:00 SESSION 9 Trends in carbon sciences and applications**

**Chairman: dr. Maciej Gubernat**

11:00 Szewczyk P, Stachewicz U, Steering triboelectric and mechanical properties of polymer fibers with carbon black

11:20 Wielowski R, Czaja P, Piekarczyk W, Gubernat M, Frączek-Szczypta A, Study of the graphitization trajectory of low- and medium-textured pyrolytic carbons under additional heat treatment

11:40 Pazdyk-Słaby W, Electrospun carbon-ceramic nanocomposites CNFs-SiC for environmental protection

12:00 Kumar D, Functionalization of graphenic surfaces via plasmas: surface electronic properties, wettability and biocompatibility

12:20 CONFERENCE CLOSING

12:30 - 14:00 LUNCH

## List of posters

Nr	Title	Authors
P01	Adsorption of radon-222 inside carbon nanotubes - studies using molecular simulations	S. Furmaniak, P.A. Gauden, A. Błajet-Kosicka, A. Ścigała, P. Kamedulski
P02	Single-walled nanoporous carbons as perspective adsorbents for removal of volatile organic compounds – a Monte Carlo study	S. Furmaniak, A. Błajet-Kosicka, P.A. Gauden, A. Ścigała, P. Kamedulski
P03	3D structured carbon nanomaterials – ways to add porosity	S. Kurtuluş, A. Ścigała, P. Madajski, A. Olejniczak, P. Binkowski, J. Pachniewska, K. Laszczyk, P.A. Gauden, R. Gołembiewski, J.P. Łukaszewicz, P. Kamedulski
P04	Chemical stability and electrical conductivity of diamond-filled polymers	Lidia Mosińska , Paweł Popielarski, Robert Szczęsny, Agnieszka Więckowska, Kateřina Aubrechtová Dragounová, Rajisa Jackivová
P05	Preparation of freestanding polyvinylpyrrolidone/carbon nanotube films for electrochemical applications	P. Ziółkowski, P. Szroeder, G. Trykowski, P. Madajski
P06	Influence of N,S-doping method on heteroatom groups distribution of doped rGO	Franciszek Zaleski, Daria Minta, Adam Moyseowicz and Grażyna Gryglewicz
P07	Development of tailored Laser-Induced Graphene Electrodes for High-Performance Glucose Sensing	Mohsen Khodadadiyazdi, Aiswarya Manohar, Jacek Ryl
P08	The novel biopolymer-carbon nanocomposite hydrogel foils with a drug delivery mechanism based on carbon nanotubes	S. Wilk, M. Dziadek, K. Cholewa-Kowalska and A. Benko
P09	Electrochemical Modification of Carbon Cloth as a Key to CNSs Synthesis for ORR/OER Electrocatalysts	I. Walendzik, K. Kordek-Khalil, M. Pawlyta and P. Rutkowski
P10	Conductive Carbon-Ceramic Foam Filters Modified by Oxide Nanofillers as Electrode Materials for Photoelectrolysis Wastewater Treatment	Iwona Kaczmarzyk, Zofia Jeleniewska, Olena Onyshchenko, Marta Prześniak-Welenc, Paweł Ślepski, Robert Bogdanowicz, Jacek Ryl
P11	Research on pultrusion as a method for obtaining carbon fiber reinforced rods in carbon-carbon composites	R. Wielowski, J. Stojecki, M. Szatkowska, P. Szatkowski <sup>1</sup> and M. Gubernat
P12	Morphological properties of carbonized plastic waste for use as electrode material	P. Szroeder, P. Kamedulski, B. Kubiak

<b>P13</b>	Determination of the adsorption mechanism on carbonaceous adsorbents with magnetic properties	W.Grabowska, E. Lorenc-Grabowska
<b>P14</b>	Functionalized Carbon Surfaces by Plasma: the Role of Surface Morphology	Divya Kumar, Marek Bialoruski, Piotr Legutko, Witold Piskorz, Andrzej Kotarba
<b>P15</b>	C <sub>60</sub> fullerene nanoparticles improve the nerve conduction after achillotomy-induced <i>muscle soleus</i> atrophy	D.M. Nozdrenko, T.Yu. Matvienko, I.V. Pampuha, K.I. Bogutska, U. Ritter, and Yu.I. Prylutsky
<b>P16</b>	Carnosine-functionalized Carbon Dots as UV-protector for cornea regeneration	R.Kurpanik, P.Jeleń, Ł.Zych, A.Ścisłowska-Czarnecka and E.Stodolak-Zych
<b>P17</b>	The influence of graphene addition on the thermal properties of flexible polyurethane coatings used in protective materials	A. Boczkowska , E. Irzmańska , M. Jurczyk-Kowalska, K. Strycharz
<b>P18</b>	Nano-Schottky junction in AgPt@GO composite and their role in ppb-level NO <sub>2</sub> gas sensor	Dariusz Lukowiec, Marcin Procek, Adrian Radoń, Jerzy Kubacki, Tomasz Wasiak, Stanislaw Waclawek
<b>P19</b>	Preparation of 3D carbon fibre reinforced carbon composites for rocket motor nozzles	M. Zambrzycki, M.Gubernat, R. Wielowski, W. Piekarczyk, A. Frączek-Szczypta
<b>P20</b>	Polypropylene nanocomposites containing carbon nanofillers for MV and HV power cables	S. Paszkiewicz, P. Lesiak, I. Korczyńska, E. Piesowicz, L. Resner and Z. Ortega Medina
<b>P21</b>	Study of the oxidative thermal stabilization process of hard coal tar pitch for carbon-carbon composites matrix precursor	M.Gubernat, R.Wielowski, M.Zambrzycki, A.Frączek-Szczypta
<b>P22</b>	Study of activated carbon by differential scanning calorimetry	Jakub Łęcki, Grzegorz Makomaski, Karolina Brzezińska
<b>P23</b>	Luminescence of tris(8-quinolinato)aluminum(III) (Alq <sub>3</sub> ) adsorbed into activated carbons	P.A. Gauden, P. Kamedulski, A. Ściagała, R. Szczęsny, S. Biniak