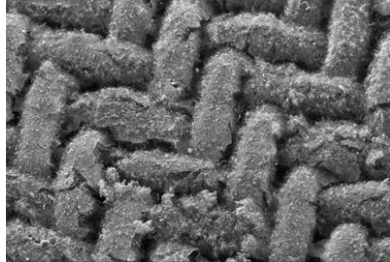
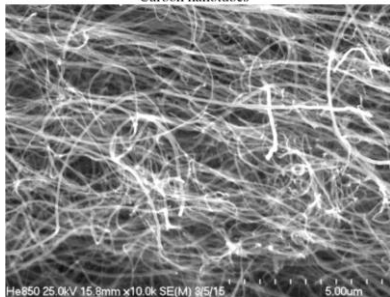




POLISH NATIONAL AGENCY  
FOR ACADEMIC EXCHANGE



STER  
PROGRAMME

<b>name of the unit:</b> INSTITUTE OF GENERAL AND ECOLOGICAL CHEMISTRY, Lodz University of Technology		<b>symbol:</b> I-31
<b>head of the unit:</b> Prof. dr hab. Iwona Szynkowska -Jóźwik	<b>potential promoters:</b> Dr hab. Tomasz Maniecki prof. uczelni	<b>contact person:</b> Dr hab. Tomasz Maniecki prof. uczelni Dr inż. Radosław Ciesielski Dr inż. Oleksandr Shtyka Dr inż. Mateusz Zakrzewski
<b>scope of activities:</b> <ul style="list-style-type: none"><li>-synthesis of new materials for catalytic applications (CNT, TiO<sub>2</sub>NT, inorganic composites, etc.)</li><li>-investigation of the effect of electric and magnetic fields on the chemical processes</li><li>- photocatalytic reduction of CO<sub>2</sub> to value-added products</li><li>- catalytic hydrogenation of CO<sub>2</sub> to value-added products</li><li>-investigation of the state and nature of the catalysts for: methane reforming, selective oxidation of methane, CO oxidation processes</li><li>-characterization of carbon deposit formed during catalytic processes</li><li>- synthesis and characterization of nanomaterials</li></ul>		<b>graphic material</b> Stainless steel modified with carbon nanotubes  Carbon nanotubes  He850 25.0kV 15.8mm x10.0k SE(M) 3/5/15 5.00um
<b>present activities:</b> <ul style="list-style-type: none"><li>- development of the catalysts for photocatalytic processes (reduction of CO<sub>2</sub> and oxidation of organic pollutants)</li><li>- investigation of the effect of electric field on the catalytic processes</li><li>- synthesis and characterisation of carbon-based catalysts for various chemical processes</li><li>- studies of the carbon deposit formed on the surface of lanthanum-based catalysts during mixed methane reforming process</li><li>- synthesis of Ti-CNT compositions by chemical vapor deposition assisted by ultrasound for the photocatalytic oxidation of carbon monoxide (II).</li></ul>		
<b>Future activities:</b> synthesis and characterization of N-doped and TiO <sub>2</sub> -doped carbon materials for catalytic applications		



POLISH NATIONAL AGENCY  
FOR ACADEMIC EXCHANGE



STER  
PROGRAMME

#### Publications/patents, awards, projects:

1. Anodic TiO<sub>2</sub>nanotube arrays for photocatalytic CO<sub>2</sub>conversion: Comparative photocatalysis and EPR study Savchuk, T., Gavrilin, I., Konstantinova, E.,Gavrilov, S., Zaitsev, V. Nanotechnology, 2022, 33(5), 055706
2. Synthesis, spectroscopic, thermal, and catalytic properties of eight new complexes of metal(II) formates or propionates with imidazole, relationship between the carbon chain length and catalytic activity Rogalewicz, B., Maniecki, T., Ciesielski, R., Czylkowska, A. Materials, 2022, 15(1), 142
3. Effect of ruthenium and cerium oxide (IV) promoters on the removal of carbon deposit formed during the mixed methane reforming process Zakrzewski, M., Shtyka, O., Ciesielski, R., Arcab, N., Maniecki, T. Materials, 2021, 14(24), 7581
4. Development of TiO<sub>2</sub>- And MWCNT based photocatalysts with Au and Cu clusters by electrophoretic deposition Sorokina, L.I., Lebedev, E.A., Dubkov, S.V., Kedziora, A., Gromov, D.G. Journal of Physics: Conference Series, 2021, 1954(1), 012048
5. The formation of cr-al spinel under a reductive atmosphere Shtyka, O., Maniukiewicz, W., Ciesielski, R., Sierański, T., Maniecki, T. Materials, 2021, 14(12), 3218
6. Steam reforming of ethanol for hydrogen production: influence of catalyst composition (Ni/Al<sub>2</sub>O<sub>3</sub>, Ni/Al<sub>2</sub>O<sub>3</sub>-CeO<sub>2</sub>, Ni/Al<sub>2</sub>O<sub>3</sub>-ZnO) and process conditions Shtyka, O., Dimitrova, Z., Ciesielski, R., Czylkowska, A., Maniecki, T. Reaction Kinetics, Mechanisms and Catalysis, 2021, 132(2), pp. 907-919
7. Adsorption and photocatalytic reduction of carbon dioxide on TiO<sub>2</sub> Shtyka, O., Shatsila, V., Ciesielski, R., Szyrkowska-Jóźwik, M.I., Maniecki, T. Catalysts, 2021, 11(1), pp. 1-12, 47
8. Mechanistic Studies of Methanol Synthesis Reaction over Cu and Pd-Cu Catalysts Ciesielski, R., Shtyka, O., Zakrzewski, M., Kedziora, A., Maniecki, T.P. Kinetics and Catalysis, 2020, 61(4), pp. 623-630

#### Keywords:

CNT, TiO<sub>2</sub>-NT, CNT doped with titania or nitrogen, methane reforming, carbon deposits, ultrasound, photocatalysis, CO<sub>2</sub> hydrogenation, novel Ti-CNT materials, lanthanum catalysts

#### List of internship proposal in this research team:

- Investigation of novel catalytically active materials, Investigation of perspective chemical processes