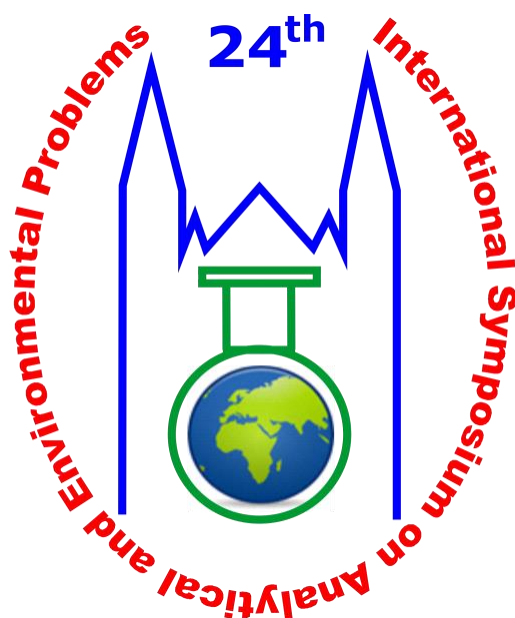




***PROCEEDINGS OF THE***  
***24<sup>th</sup> International Symposium***  
***on Analytical and Environmental Problems***

*Szeged, Hungary*  
*October 8-9, 2018*



**University of Szeged**

**Edited by:**  
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**Publisher:**  
University of Szeged, H-6720 Szeged, Dugonics tér 13,  
Hungary

**ISBN 978-963-306-623-2**

**2018.**  
**Szeged, Hungary**

***The 24<sup>th</sup> International Symposium  
on Analytical and Environmental Problems***

**Organized by:**

SZAB Kémiai Szakbizottság Analitikai és Környezetvédelmi Munkabizottsága

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## EXERGY LIFE CYCLE ASSESSMENT OF NI-BASED CATALYST SYNTHESIS PROCESSES

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### Abstract

Within the life cycle assessment, exergy analysis is one of the specific approaches to evaluate impacts on the environment through the quality of energy which is degraded during the production process [1]. Exergy can be described as a measure of resources depletion and it can be used to evaluate the process efficiency. Comparative assessment of product and processes through life cycle assessment is often used to identify the differences and environmental hotspots. This research applies exergy life cycle assessment to compare different Ni-based catalysts synthesis processes. In previous research [2,3] the authors compared novel Ni-Pd/Al<sub>2</sub>O<sub>3</sub> catalyst synthesis processes with other ones from environmental and performance point of view. Idea of this research is to calculate the impacts on the environment by the total exergy consumption of Ni-based catalyst processes and to compare these results with the results from previous research. Compared with other Ni-based catalyst synthesis processes, the assessment results confirm the previous findings that the novel Ni-Pd/Al<sub>2</sub>O<sub>3</sub> catalyst synthesis process has the smallest environmental impact. Furthermore, exergy life cycle assessment provided insight into impacts on the non-renewable and renewable resources.

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