**Invited Session on "Complexity Measures and Models in Product and Process Design"
for IFAC MIM 2019**

Invited session identification code *bgxvs*

IFAC MIM 2019, August 28-30, 2019, Berlin, Germany

https://ifac.papercept.net/

<u>**Session Chairs:**</u>

- *Prof. Dr. Vladimir Modrak, TUKE, SLOVAKIA*

- *Dr. Zuzana Soltysova, TUKE, SLOVAKIA*

There is no doubt that, for most manufacturers, increased manufacturing process complexity means significantly increased costs. The inherent uncertainties of discrete manufacturing processes (DMPs) are dominantly caused by changing product requirements that occur on an irregular basis. Moreover, DMPs are often disturbed by internal dynamics, e.g., equipment failures. There are several complexity categorizations to manufacturing processes and products. For example, it is possible to distinct two kinds of system complexity, called external and internal respectively. A comparison between the external and internal dynamics shoved that high external complexity drivers leads to high internal complexity drivers. Similarly, as biological organisms, manufacturing systems are also quite capable of adapting to external changes. The agility of companies to face increasing demand for responsiveness current needs and tomorrow's challenges has been defined as adaptive manufacturing. As the system depends on its external environment, it is reasonable to extract for its description only what is reflected in its internal model according to which it operates. In this regard, complexity measures and models in product and process design can be effective tools for making optimization decisions assuming that complexity is reduced without losing functionality.

<u>**Session topics:**</u>

The session chairs invite researchers and decision-makers from academia, industry, and government to contribute theoretical and applied research papers in areas including but not limited to the following topics:

Topological complexity measures of manufacturing processes; Uncertainty drivers in manufacturing processes designing; Uncertainty drivers in product designing; The impact of complexity on manufacturing plant performance; Implications of manufacturing process complexity on delivery performance; Product complexity and its impact on manufacturing process complexity; Algorithms and computational complexity measures for manufacturing processes; Complexity issues of mass customized manufacturing; Axiomatic design theory related to product and process design.

<u>**Submission:**</u>

For author guidelines, please refer to www.ifac-control.org. All papers must be submitted electronically using Symposium Manuscript Management System (CMMS). All papers must be prepared in a two-column format in accordance with the IFAC manuscript style. Please use the official IFAC instructions and template to prepare your contribution as full-length draft paper and submit it online by December 15, 2018. Submission details are available on the symposium website. All submissions must be written in English. All papers that conform to submission guidelines will be peer-reviewed by IPC members. The corresponding author submits the paper online (pdf format) as **an invited session paper**. Submission as an invited paper requires **the invited session code *bgxvs***. Several international journals are associated with the MIM 2019 for publication of special issues.

<u>**Important dates:**</u>

December 15, 2018	Deadline for submission
February 20, 2019	Notification of acceptance/rejection
March 15, 2019	Deadline for the final submission