

Recommendation of the supervisor on Ph.D. thesis of Daniel Karthik, M.Tech.


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Thesis title: Carbon-based functional structures from pyrolysis of Kevlar Fabric Wastes

The PhD thesis of Daniel Karthik is concerned with the utilization of fibrous aromatic polyamide (Kevlar) waste for the development of microporous and electrically conductive activated carbon by means of novel single-stage processes of carbonization. He investigated the thermal degradation of Kevlar and its volatile products of pyrolysis. He studied mainly physical, morphological, electrical conductivity, electromagnetic shielding, and joule heating behavior of carbonized materials under varying process conditions of pyrolysis. He studied the progressive changes in concentrations of volatile products and their differences in volatility from the thermal decomposition of Kevlar depending on the pyrolysis temperature, by demonstrating an algorithm for the separation of mixed spectra obtained by UV spectroscopy. The thesis adheres to the specified format and successfully achieves all of its intended objectives. The candidate has demonstrated a high level of systematicity over the course of his research, thus achieving outstanding results through the pursuit of specific aims. He employed advanced scientific methods to evaluate and examine data. The discussions pertaining to the outcomes are coherent and include comparisons of the attained results with those of other published works. The language proficiency exhibited in the thesis is commendable and satisfies the standards expected at the doctoral level. Several of his findings exhibit novelty and have already been published in high-impacted academic journals. His exceptional abilities are evidenced by his publication record in journals with high-impact factors. Throughout his research tenure at TUL, he has promoted his findings through the publication of 7 papers in journals with high-impact factors, 4 book chapters, and 17 articles in conference proceedings. Throughout his academic pursuits, he demonstrated a high level of diligence and competency. The findings of the dissertation are valuable, innovative, and readily applicable in practical settings. Thus, it is highly recommended that the thesis be presented for the final doctoral defense.

When searching for plagiarism, a match of 21 percent was found with the habilitation thesis of Ing. Tunáková PhD and match 17 percent with summary of thesis (autorepeat) of Ing. Salman Naeem. In both cases, it is based on joint publication of these workers, which was published in the journal Carbon (2017) and is presented in full both in the dissertation (Karthik) and in the habilitation thesis (Tunáková), which otherwise differ significantly in terms of subject matter. The summary of thesis (Naeem) also contains parts of their joint publication. Therefore, it is not plagiarism, but an incorrect evaluation by the program, which does not consider the option that each of the co-authors chooses the form of a dissertation or habilitation thesis as an annotated overview of published articles, the full texts of which are an obligatory part of it.

Prof. Ing. Jiří Militký, CSc. EURING

 Supervisor