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Jakubík, Pavel
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Preparation of soluble $[n]$ phenacene derivatives

Student: Ing. Pavel Jakubík
Supervisor: Ing. Jan Storch, Ph. D.

$[n]$ Phenacenes are group of polycyclic aromatic hydrocarbons, which are isomeric form of linear $[n]$ acenes. Owing to their conjugated π -electron system, both of these groups are suitable for use in optoelectronic. For utilization in these applications, solubility in common organic solvents is desired. In case of $[n]$ phenacenes, which are generally poorly soluble, increase in solubility is achieved by suitable substitution. Compared to unsubstituted $[n]$ phenacenes, currently prepared derivatives: 1,2,3,4-tetrafluoro[5]phenacene, 2-aza[5]phenacene, 2,9-diaza[5]phenacene and 12,13-diaza[5]phenacene (Figure 1) show significantly increased solubility.

Batch arranged photocyclization reaction is not effective in terms of time consumption and purity of resulting products, which limits its use for large-scale synthesis. Due to this fact, a prototype of flow photocyclization apparatus was designed, allowing time-effective photocyclization in a multi-gram scale, which is crucial for future research of $[n]$ phenacenes.

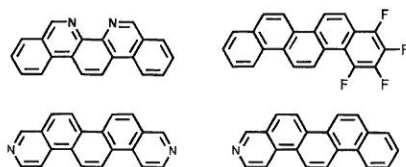


Figure 1. Prepared $[n]$ phenacenes with increased solubility