



národní  
úložiště  
šedé  
literatury

## **Adaptive synthesis of functional amphiphilic dendrons for drug nanocarrier assembly**

Edr, Antonín  
2022

Dostupný z <http://www.nusl.cz/ntk/nusl-508658>

Dílo je chráněno podle autorského zákona č. 121/2000 Sb.

Tento dokument byl stažen z Národního úložiště šedé literatury (NUŠL).

Datum stažení: 10.04.2024

Další dokumenty můžete najít prostřednictvím vyhledávacího rozhraní [nusl.cz](http://nusl.cz).

## Adaptive synthesis of functional amphiphilic dendrons for drug nanocarrier assembly

Student: Ing. Anonín Edr  
Supervisor: Ing. Tomáš Strašák, PhD.

Drug nanocarriers such as liposomes or micelles are a quickly developing biochemical field. These supramolecular objects can potentially ensure drug's targeting, reduction of drug's side effects or increase of the drug's efficacy. In the recent decades, research has been focused on preparation of alternative amphiphilic building blocks leading to new nanocarriers with enhanced properties. Effort is made to obtain nanoparticles with optimal stability, lower cytotoxicity, higher selectivity *etc.* One of such alternative buildings blocks are amphiphilic dendrons, precisely defined molecules that contain one linear and one branched part. They are a broad research area with high potential.<sup>1</sup>

In this work, an adaptive synthesis of new type of amphiphilic dendrons for nanocarrier purposes will be presented.<sup>2</sup> This methodology was applied in preparation of vast library of substrates (Figure 1). Firstly, it was applied in preparation of series of dendrons bearing different polar groups on their dendritic periphery (OH, COOMe, COOH, COO<sup>-</sup>, NH<sub>2</sub>, NMe<sub>2</sub>H<sup>+</sup>, PPh<sub>3</sub><sup>+</sup>). Secondly, it was applied in preparation of two series of ammonium resp. phosphonium dendrons carrying different number of lipophilic alkyl chains and different number of dendritic wedges. Physico-chemical studies of these two series will also be shown. And thirdly, the methodology was applied in preparation of unsymmetrical analogues of the previously mentioned dendrons with one alkyl chain, one polar dendritic wedge and one auxiliary molecule. If these analogues were added to the mixtures with symmetrical dendrons, the final nanoparticle would carry advantages of the auxiliary molecule, *e.g.*, fluorescence.

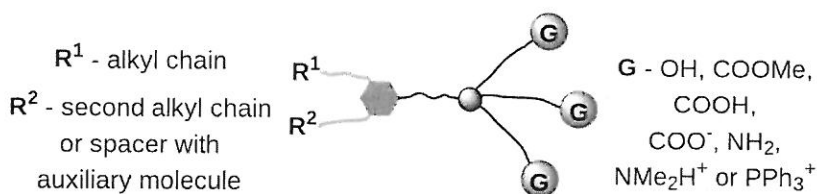


Figure 1: Schematic presentation of the prepared dendrons



#### References

1. Apartsin, E.; Caminade A.-M. Supramolecular Self-Associations of Amphiphilic Dendrons and Their Properties *Chem.-Eur. J.* **2021**, *27*, 17976.
2. Eder, A.; et al. Adaptive synthesis of functional amphiphilic dendrons as a novel approach to artificial supramolecular objects *Int. J. Mol. Sci.* **2022**, *23*, 2114.

