

# UV-ANALYSIS OF MACROCYCLIC AND LINEAR OLIGOMERS OF HEMICUCURBITURILS

Maria Fomitšenko<sup>1</sup>, Sandra Kaabel<sup>1</sup>, Karin Kreekman<sup>1</sup>, Madli Trunin<sup>1</sup>, Ivar Järving<sup>1</sup>, Riina Aav<sup>1</sup>

<sup>1</sup>*Institute of Chemistry and Biotechnology, Tallinn University of Technology, Akadeemia tee 15, 12618 Tallinn, Estonia*

e-mail: maria.fomitsenko@ttu.ee

In biochemistry and other classes of polymeric compounds, an assumption of proportionality between the UV absorbance and the number of repeating chromophore units is usually made. The studied macrocycles - hemicucurbiturils (HC) - are also synthesised via a polymerization reaction, in which a complex mixture consisting of cyclic and linear homologues and isomers is formed. The analysis and separation of such a mixture is challenging.

We have synthesized and characterised enantiomerically pure hemicucurbiturils [1-4] (see Figure 1A), which are notable for their capability to bind anions, and additionally 6-membered achiral diastereomers of cyclohexano-hemicucurbit[6]urils (cycHC[6]) (Figure 1B).

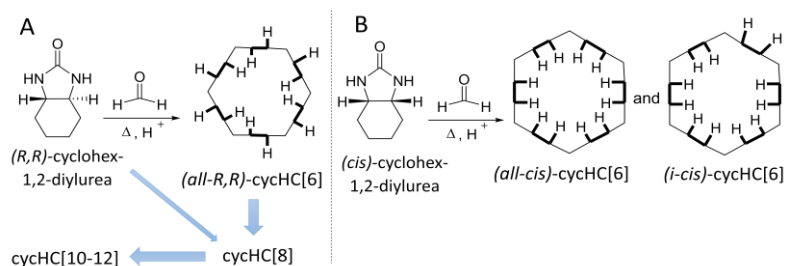


Figure 1. A) synthesis of (all-*R,R*)-cyclohexano-hemicucurbituril homologues and B) synthesis of (all-*cis*)- and (*i-cis*)-cyclohexano-hemicucurbit[6]urils

In this work we show that compounds (macrocycles, oligomers and monomers) consisting of the same building blocks have some unexpected spectroscopic peculiarities. Observed phenomenon should be considered also in quantification of other classes of polymeric macrocycles.

## References

1. R. Aav, E. Shmatova, I. Reile, M. Borissova, F. Topic, K. Rissanen, 2013, *Organic Letters*, 15, 3786.
2. M. Fomitšenko, E. Shmatova, M. Öeren, I. Järving, R. Aav, 2014, *Supramolecular Chemistry*, 26, 698.
3. E. Prigorchenko, M. Öeren, S. Kaabel, M. Fomitšenko, *et al*, 2015, *Chemical Communications*, 51, 10921.
4. S. Kaabel, J. Adamson, F. Topić, A. Kiesilä, E. Kalenius, M. Öeren, M. Reimund, E. Prigorchenko, A. Löökene, H. J. Reich, K. Rissanen, R. Aav, *Chemical Sci.*, 2016, DOI: 10.1039/c6sc05058a



Euroopa Liit  
Euroopa  
Regionaalarengu Fond



Eesti  
tuleviku heaks