Polycondensation

Aims:

Determination of the degree of polymerization via GPC and end group analysis of the ^{1}H-NMR spectra; measurements of UV-vis absorption and emission spectra; characteristics of polycondensation.

Tasks:

1. Polycondensation of a bisacetylene under Glaser-Hay conditions
2. Analysis of ^{1}H-NMR spectra of monomer and oligomeric mixture
3. GPC analysis of the oligomeric mixture
4. Investigation of the oligomeric mixture via UV-vis absorption and emission spectra

Practical application:

The polycondensation of the bisacetylene is carried out analogously to the literature (supporting information) quoted below.

Analysis:

1. Assign the Signals of the monomer and oligomeric mixture in the ^{1}H-NMR spectra and determine the degree of polymerization via end group analysis.
2. Calculate the degree of polymerization with the data obtained by GPC analysis.
3. Compare the degrees of polymerization with each other. What are possible sources of errors in both methods?
4. Analyze the UV-vis absorption and emission spectra qualitatively by comparing the spectra of the monomer and oligomeric mixture with each other.

Literature:

 D. Mössinger, S.-S. Jester, E. Sigmund, U. Müller, S. Höger, *Macromolecules* **2009**, *42*, 7974-7978. (Paper, Supporting Information)