

## **Abstract:**

This work focuses on development of both low- and high-molecular substances usable in fluorescent navigated endoscopic surgery with an emphasis on the characteristics of both tumor tissue and the substance itself. The usage of low-molecular substances, such as indocyanine green, has been abandoned over the past years, mostly due to poor localization and short circulation time. New polymer probes such as those based on pHPMA, were introduced to resolve these flaws. They benefit from the enhanced permeability and retention effect of the tumor tissue which is specific for macromolecules. The attachment of fluorophores to polymer carriers induces quenching, therefore novel systems are being designed to be able to release the fluorophore for example due to acidic environment of a tumor tissue or the overexpression of some peptidases. The experimental part of this work is dedicated to such polymer system with a pH-sensitive spacer-bound fluorophore.

## **Keywords:**

polymer probes, fluorescence, pH-sensitive, nanomaterials, controlled release, quenching, Cyanine7

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