# Accepted Manuscript

Star polymer-based unimolecular micelles and their application in bio-imaging and diagnosis

Xin Jin, Pei Sun, Gangsheng Tong, Xinyuan Zhu

| | |
|---|---|
| PII: | S0142-9612(18)30071-1 |
| DOI: | 10.1016/j.biomaterials.2018.01.051 |
| Reference: | JBMT 18466 |
| To appear in: | *Biomaterials* |
| Received Date: | 31 December 2017 |
| Revised Date: | 27 January 2018 |
| Accepted Date: | 29 January 2018 |

Please cite this article as: Xin Jin, Pei Sun, Gangsheng Tong, Xinyuan Zhu, Star polymer-based unimolecular micelles and their application in bio-imaging and diagnosis, *Biomaterials* (2018), doi: 10.1016/j.biomaterials.2018.01.051

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

# Star polymer-based unimolecular micelles and their application in bio-imaging and diagnosis

Xin Jin, Pei Sun, Gangsheng Tong*, Xinyuan Zhu*

School of Chemistry and Chemical Engineering, State Key Laboratory of Metal Matrix Composites, Shanghai Jiao Tong University, 800 Dongchuan Road, Shanghai 200240, China

**ABSTRACT:** As a novel kind of polymer with covalently linked core-shell structure, star polymers behave in nanostructure in aqueous medium at all concentration range, as unimolecular micelles at high dilution condition and multi-micelle aggregates in other situations. The unique morphologies endow star polymers with excellent stability and functions, making them a promising platform for bio-application. A variety of functions including imaging and therapeutics can be achieved through rational structure design of star polymers, and the existence of plentiful end-groups on shell offers the opportunity for further modification. In the last decades, star polymers have become an attracting platform on fabrication of novel nano-systems for bio-imaging and diagnosis. Focusing on the specific topology and physicochemical properties of star polymers, we have reviewed recent development of star polymer-based unimolecular micelles and their bio-application in imaging and diagnosis. The main content of this review summarizes the synthesis of integrated architecture of star polymers and their self-assembly behavior in aqueous medium, focusing especially on the recent advances on their bio-imaging application and diagnosis use. Finally, we conclude with remarks and give some outlooks for further exploration in this field.

**KEYWORDS:** *star polymer, unimolecular micelles, multi-micelle aggregates, bio-imaging, diagnosis*

## 1. Introduction

Imaging and diagnosis of disordered region usually provide important information for pre-diagnosis, which has become essential in clinical treatments of various diseases, including cancers, arthritis and central nervous system diseases. Therefore, novel imaging and diagnostic methods have been in raising demand for decades. A typical

Download English Version:

https://daneshyari.com/en/article/6484417

Download Persian Version:

https://daneshyari.com/article/6484417

Daneshyari.com