

Accepted Manuscript

The mechanoresponsive self-assembly of spiropyran doped films with dual sensitivity

Ling Li, Chang Peng, Qian Xu, Shu Chen, Yikuan He, Weijian Xu, Jianhui Jiang

PII: S0167-577X(17)31689-0
DOI: <https://doi.org/10.1016/j.matlet.2017.11.064>
Reference: MLBLUE 23430

To appear in: *Materials Letters*

Received Date: 31 August 2017
Revised Date: 31 October 2017
Accepted Date: 14 November 2017

Please cite this article as: L. Li, C. Peng, Q. Xu, S. Chen, Y. He, W. Xu, J. Jiang, The mechanoresponsive self-assembly of spiropyran doped films with dual sensitivity, *Materials Letters* (2017), doi: <https://doi.org/10.1016/j.matlet.2017.11.064>

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.



The mechanoresponsive self-assembly of spiropyran doped films with dual sensitivity

Ling Li, Chang Peng, Qian Xu, Shu Chen, Yikuan He, Weijian Xu* and Jianhui Jiang*

State Key Laboratory for Chemo/Biosensing and Chemometrics, Hunan University,
Changsha, 410082, China

E-mail: weijxu@hnu.edu.cn (Weijian Xu); jianhuijiang@hnu.edu.cn (Jianhui Jiang).

Abstract

Spiropyran as photo- and mechano- response material has attracted great attention for wide applications. However, there are few reports on the mechanoresponsive self-assembly of spiropyran with tunable morphologies. In this work, spiropyran doped PDMS films with mechanic and photo dual response are fabricated by novel biomimetic methods. Interestingly, the morphologies of these films can be transformed from smooth surface to small hole structures due to the self-assembly of spiropyran. Only mechanical forces can induce the morphological changes of the films accordingly the conversion of ring-closed spiropyran and ring-opened merocyanine. In addition, these films exhibit good photoresponsive properties: reversible changes of UV-Vis absorption, colour and wettability.

Key words: Mechanoresponsive self-assembly, Controlled morphologies, Photoresponse, Biomimetic, Structural, Surfaces.

1. Introduction

Self-assembly is very common in nature as components of any size architectures, especially the orderly molecular self-assembly of tunable microstructures [1]. Morphological changes of molecular self-assembly have attracted much attention in recent years, which can be controlled by external stimuli such as light, PH, temperature

Download English Version:

<https://daneshyari.com/en/article/8015087>

Download Persian Version:

<https://daneshyari.com/article/8015087>

[Daneshyari.com](https://daneshyari.com)