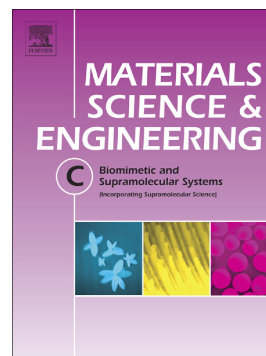


Accepted Manuscript

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Phung Ngan Le, Chan Khon Huynh, Ngoc Quyen Tran



PII: S0928-4931(17)34074-2

DOI: <https://doi.org/10.1016/j.msec.2018.02.006>

Reference: MSC 8399

To appear in: *Materials Science & Engineering C*

Received date: 12 October 2017

Revised date: 16 December 2017

Accepted date: 8 February 2018

Please cite this article as: Phung Ngan Le, Chan Khon Huynh, Ngoc Quyen Tran , Advances in thermosensitive polymer-grafted platforms for biomedical applications. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Msc(2017), <https://doi.org/10.1016/j.msec.2018.02.006>

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Advances in Thermosensitive polymer-grafted platforms for biomedical applicationsPhung Ngan Le^{1,2}, Chan Khon Huynh³, Ngoc Quyen Tran^{1,2,4*}¹*Institute of Research and Development, Duy Tan University, Da Nang City 550000, Vietnam*²*Institute of Applied Materials Science, Vietnam Academy of Science and Technology, 1A TL29, District 12, Hochiminh City 700000, Vietnam*³*Biomedical Engineering Department, International University, National Universities in HCMC, HCMC 70000, Viet Nam*⁴*Graduate School of Science and Technology Viet Nam, Vietnam Academy of Science and Technology, 1A TL29, District 12, Hochiminh City 700000, Vietnam***Abstract**

Studies on “smart” polymeric material performing environmental stimuli such as temperature, pH, magnetic field, enzyme and photo-sensation have recently paid much attention to practical applications. Among of them, thermo-responsive grafted copolymers, amphiphilic steroids as well as polyester molecules have been utilized in the fabrication of several multifunctional platforms. Indeed, they performed a strikingly functional improvement comparing to some original materials and exhibited a holistic approach for biomedical applications. In case of drug delivery systems (DDS), there has been some successful proof of thermal-responsive grafted platforms on clinical trials such as ThermoDox®, BIND-014, Cynviloq IG-001, Genexol-PM, etc. This review would detail the recent progress and highlights of some temperature-responsive polymer-grafted nanomaterials or hydrogels in the “smart” DDS that covered from synthetic polymers to nature-driven biomaterials and novel generations of some amphiphilic functional platforms. These approaches could produce several types of smart biomaterials for human health care in future.

Keywords: thermo-responsive, biopolymers, drug delivery systems, biomedical, applications

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