

# 化学工程学科留学研究生培养模式探索与实践

## 目录

**支撑材料 1:** 王立教授“来华留学生教育模范个人”荣誉证书

**支撑材料 2:** 2008 级留学博士毕业生 Muhammad Amin Abid 在中国  
做博士后期间获得中国科技部国际杰青计划资助证书

**支撑材料 3:** 发表的留学研究生教育论文

**支撑材料 4:** 留学研究生获得的授权发明专利

**支撑材料 5:** 留学研究生发表的部分高水平论文首页

**支撑材料 6:** 留学研究生发表的部分 SCI 收录论文目录

支撑材料 1：王立教授“来华留学生教育模范个人”荣誉证书



支撑材料 2: 2008 级留学博士毕业生 Muhammad Amin Abid 在中国做博士后期间获得中国科技部国际杰青计划资助证书



支撑材料 3: 发表的留学研究生教育论文

# 《外国留学生工作研究》

2018 年第 1 期(总第 109 期)

---

---

## 目 录

### 【“一带一路”与来华留学教育】

- “一带一路”国家来华留学生教育发展探究  
..... 中国石油大学(华东) 栾凤池(1)
- 上海高校“一带一路”沿线国家来华留学生文化适应问题研究  
..... 复旦大学 戴蓉(14)

### 【留学生跨文化教育研究】

- “精准扶贫”理论体系下来华留学生跨文化交流平台的构建  
——以哈尔滨工业大学为例  
..... 哈尔滨工业大学 顾建政 刘孟男(21)
- 跨文化学习中的异文化接受机制研究  
——以东盟来华留学生为例  
..... 广西民族大学 张群芳(26)
- 来华留学生跨文化能力培养的实证研究  
——以中韩年轻人饮食习惯比较课为例  
..... 东华大学 鲁洲(31)

### 【留学生思想教育工作研究】

- 思想政治教育视域下高校来华留学教育研究初探  
——以汉语国际教育课堂教学为例  
..... 同济大学 张林华(36)
- 学生角色认同与来华留学生行为规范养成教育工作探析  
——以西北农林科技大学为例  
..... 西北农林科技大学 邵贵文(45)

### 【留学生教学工作研究】

- 以课程整合促进医学留学生中国文化课教学质量的提高  
..... 大连医科大学 李静(49)
- 提高来华医学留学生(MBBS)执业医师考试通过率方法探讨  
..... 大连医科大学 李琦 崔艳华(54)

### 【留学生教育发展研究】

- 浙江省来华留学教育竞争力的现状与提升途径  
..... 浙江大学 叶文(58)
- 关于我国高校留学生教育若干问题的思考  
..... 武汉大学 郭莉(64)
- 小议地方高校来华留学工作  
——以西北大学为例 ..... 西北大学 张晓刚(68)

### 【留学生管理工作研究】

- 国际学生趋同管理模式新探  
..... 苏州大学 朱苏静(71)
- 浅谈我校 MBBS 项目留学生教育管理工作  
..... 四川大学 雷虹(76)
- 美国西北部某大学孔子学院形态描写  
..... 华南理工大学 何继军 付洁萍(81)

### 【来华留学教育信息】

- 我校力推留学生教育,首创国内高校留学生主题原创歌曲  
..... 温州大学 熊勇(88)
- 我校理工科留学博士研究生培养浅谈  
..... 浙江大学 俞豪杰 王立(92)
- 会刊《外国留学生工作研究》简介  
..... 《外国留学生工作研究》主编 陆应飞(94)

### 【留学生思想教育活动纪实】

- 推进共建“一带一路”教育行动下的留学生活动  
——以我校孔子学院奖学金生“感知鄂尔多斯社会实践活动”为例  
..... 北京师范大学 韩瑞莲(98)
- 留学科大,感知中华  
——西南科技大学留学生“感知中国”活动纪实  
..... 西南科技大学 张贯之 刘遥(101)

# 我校理工科留学博士研究生培养浅谈

浙江大学 俞豪杰 王立

本文以我们浙江大学留学博士研究生(共16人,其中7人已获博士学位)为例,浅谈对理工科留学博士研究生培养的一些认识和体会。

## 一、了解知识结构和业务水平,制订合适的培养方案

目前来我国攻读博士学位的研究生还是发展中国家的学生占多数。我校留学博士研究生分别来自巴基斯坦、埃及和苏丹。由于培养体系、教学水平和文化风俗等差异,尽管来华留学的学生大多都是他们本国学生中的佼佼者,但和中国学生在基础知识的掌握、实验技能和论文写作等方面还是有一定差距。

在与学生联系过程中,根据学生的简历和课程学习情况,选择专业和研究方向对口或者较接近的、基础较好的学生。入学后,根据研究方向,建议他们选修一些本专业的基础课程,来巩固专业知识,为开展研究工作做准备。

同时根据学生的特点,设计由易到难的实验工作,在开展研究工作的初期,培养实验技能。这样有针对性地培养半年到一年以后,留学博士研究生基本能较好地熟悉课题,开展研究工作。

## 二、老生带新生,尽快融入环境

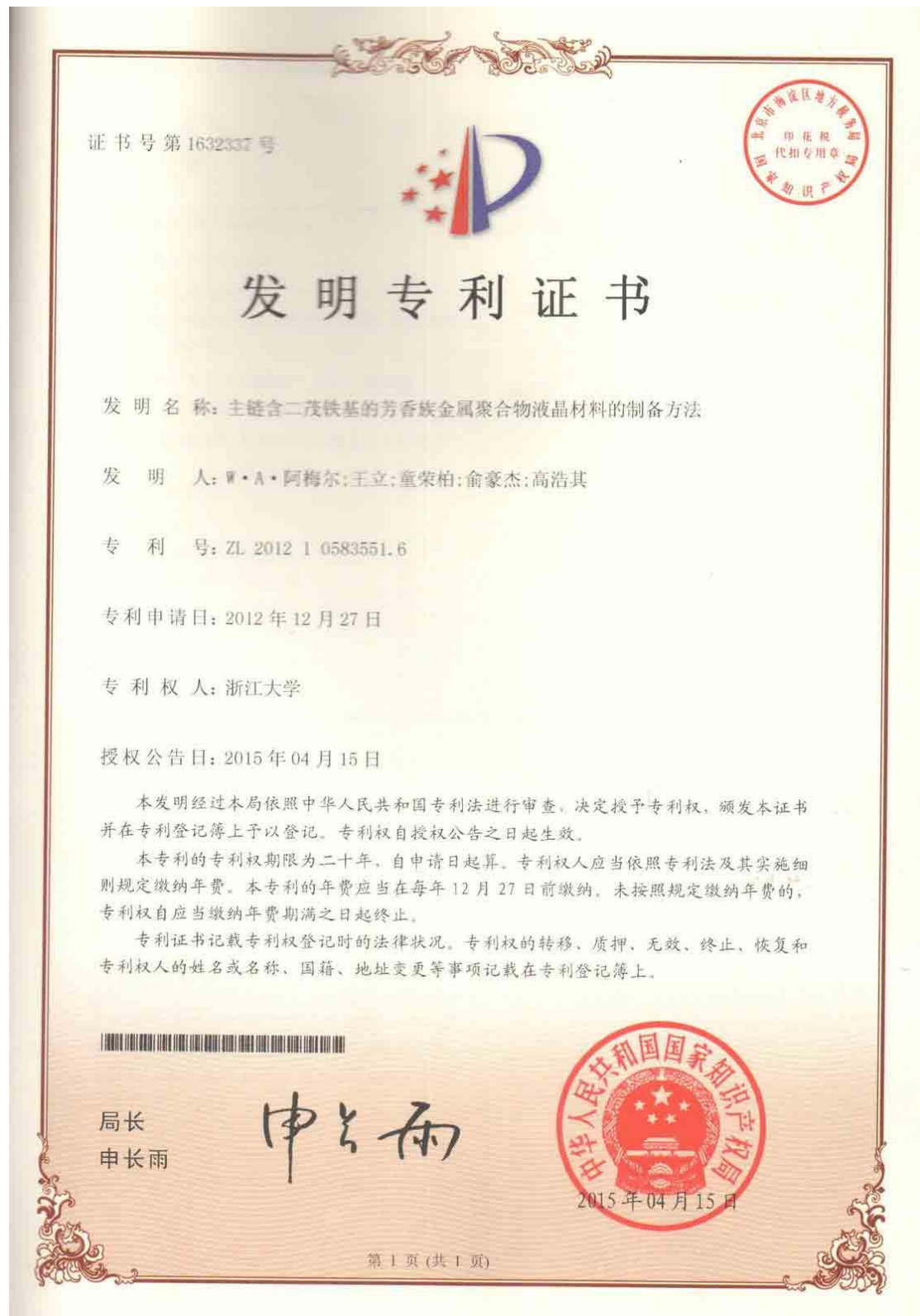
留学博士研究生初到中国还面临的一个基本问题就是语言问题,虽然他们学习了一定的汉语课程,有些也获得了较好的汉语成绩,但在日常学习生活中,比如网上选课、试剂领用、送样检测等方面面临语言上的困难,我们一般安排国内的研究生老生和他们结对子,帮助他们熟悉办理各类事项的流程。这样经过一两个月的熟悉过程,留学博士研究生基本能够独立处理这方面的事务了。

## 三、抓在前头,控制进度

我国博士研究生培养体系的学制一般是3-5年,但来华读博的留学生一般都是申请CSC的奖学金和各高校自设的奖学金,其资助年限一般是3年,超过3年,如果没有奖学金来源资助,他们在华的学习生活将面临很大的经济压力,也影响学生情绪的稳定性。

而很多留学博士研究生原来在本国的学习压力较小、工作效率较低、时间规划能力较弱,所以在开学时,最好帮助他们制订较为详细、完整、可操作性强的学习和培养计划,将工作任务按学期和年度分解,明确时间节点,督促他们按时按计划完成工作任务,这样他们从

## 支撑材料 4：留学研究生获得的授权发明专利



证书号第 1533800 号



# 发明专利证书

发明名称: 主链含二茂铁基的脂肪族金属聚合物液晶材料的制备方法

发明人: W·A·阿梅尔;王立;童荣柏;俞豪杰;高浩其

专利号: ZL 2012 1 0581298.0

专利申请日: 2012 年 12 月 27 日

专利权人: 浙江大学

授权公告日: 2014 年 12 月 03 日

本发明经过本局依照中华人民共和国专利法进行审查, 决定授予专利权, 颁发本证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。

本专利的专利权期限为二十年, 自申请日起算。专利权人应当依照专利法及其实施细则规定缴纳年费。本专利的年费应当在每年 12 月 27 日前缴纳。未按照规定缴纳年费的, 专利权自应当缴纳年费期满之日起终止。

专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。



局长  
申长雨

申长雨



## 支撑材料 5: 留学研究生发表的部分高水平论文首页

Muhammad Akram, Li Wang\*, Haojie Yu\*, et al. Polyphosphazenes as anti-cancer drug carriers: From synthesis to application. *Progress in Polymer Science*, 2014, 39, 1987-2009 (影响因子 29.190)

Progress in Polymer Science 39 (2014) 1987–2009



Contents lists available at ScienceDirect

Progress in Polymer Science

journal homepage: [www.elsevier.com/locate/ppolysci](http://www.elsevier.com/locate/ppolysci)



### Polyphosphazenes as anti-cancer drug carriers: From synthesis to application



Muhammad Akram, Li Wang\*, Haojie Yu\*, Wael A. Amer, Hamad Khalid, Nasir M. Abbasi, Yongsheng Chen, Zain-ul-Abdin, M. Saleem, Rongbai Tong

State Key Laboratory of Chemical Engineering, Department of Chemical and Biological Engineering, Zhejiang University, 38 Zheda Road, Hangzhou 310027, China

#### ARTICLE INFO

##### Article history:

Received 10 October 2013  
Received in revised form 9 June 2014  
Accepted 29 July 2014  
Available online 1 August 2014

##### Keywords:

Anti-cancer drug  
Poly(organophosphazene)  
pH-responsiveness  
Drug delivery system

#### ABSTRACT

Currently, most of administered anti-cancer drugs are low molecular weight compounds (as compare to polymers) and hydrophobic in nature. Such small molecular anti-cancer drugs possess fast clearance rate from the blood circulating system and have toxic side effects. Poly(organophosphazenes) have wide range of biomedical applications owing good biocompatibility, sustainability and degradability into non-toxic by-products. So, in this review, we have carefully selected such poly(organophosphazenes), which proved to be good anti-cancer drug carriers because of overcoming crucial issues related to the administration of anti-cancer drugs i.e. poor hydrophilicity, lack of cancer cells specificity, and fast clearance rate from blood circulating system. Thence, the main focus of this review is to highlight the advancement that have been achieved in the synthesis of poly(organophosphazenes) and their application in anti-cancer drug delivery system (DDS).

© 2014 Elsevier Ltd. All rights reserved.

#### Contents

1. Introduction .....	1988
2. Polyphosphazenes: Attractive biomaterials .....	1988
3. Synthesis of polyphosphazenes for anti-cancer DDS .....	1989
3.1. Polymeric encapsulation .....	1989
3.1.1. Drug loaded nano-vesicles .....	1989
3.1.2. Drug loaded hydrogel matrixes .....	1993
3.2. Covalently bounded drug-polymer conjugate .....	1993
3.2.1. Platinum based drug-polymer conjugates .....	1995
3.2.2. Non-platinum based anti-cancer drug-polymer conjugates .....	1997
4. Polyphosphazenes as therapeutic index enhancer of anti-cancer drugs .....	2000
5. Future aspects .....	2006
Acknowledgments .....	2006
References .....	2006

\* Corresponding authors. Tel: +86 571 8795 3200; fax: +86 571 8795 1612.  
E-mail addresses: [opLwl@zju.edu.cn](mailto:opLwl@zju.edu.cn) (L. Wang), [hjyu@zju.edu.cn](mailto:hjyu@zju.edu.cn) (H. Yu).

Md Alim Uddin, Haojie Yu\*, Li Wang, et al. Dynamics in controllable stimuli-responsive self-assembly of polymer vesicles with stable radical functionality. ACS Applied Materials & Interfaces, 2021, 13, 61693-61706 (影响因子 9.229)

## Dynamics in Controllable Stimuli-Responsive Self-Assembly of Polymer Vesicles with Stable Radical Functionality

Md Alim Uddin, Haojie Yu,\* Li Wang, Bilal Ul Amin, Sahid Mehmood, Ruixue Liang, Fazal Haq, Jian Hu, and Jinming Xu

Cite This: ACS Appl. Mater. Interfaces 2021, 13, 61693–61706

Read Online

ACCESS |

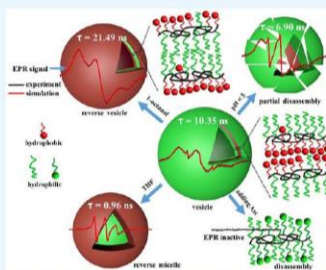
Metrics & More

Article Recommendations

Supporting Information

**ABSTRACT:** Self-assembled polymer vesicles have emerged as exciting and promising materials for their potential application in drug delivery, but the dynamics of stimuli-responsive polymers in these areas with pendant functionality in order to understand the structure–property relationship under different physicochemical conditions is still open to discussion. In this work, nitroxide radical-containing copolymers were synthesized and utilized to investigate local dynamics in their vesicular assemblies. Herein, electron paramagnetic resonance (EPR) spectroscopy was applied to reveal the smart supramolecular vesicular structure and polymer chain dynamics in stimuli-responsive controlled assemblies by considering molecular-level interactions. These interactions and dynamics were dependent on the microenvironment of the assemblies, which might be affected by physicochemical parameters such as radical concentration, pH, redox agent, polarity, and viscosity. These observations help to accomplish quantitative insights into the stimuli-responsive colloidal vesicular assemblies. The vesicles were used as an anticancer drug carrier, which showed high drug loading efficiency (63.65%). The reduction-responsive prompt disassembly accelerated the release. Furthermore, the biocompatibility and anticancer activity were examined by cellular experiments against normal fibroblasts (L929) and human cervical cancer (HeLa) cell lines, respectively. The results demonstrate that this effort provides an easy strategy for designing controllable stimuli-responsive polymer nanosystems which promotes their promising application in cancer treatment.

**KEYWORDS:** stimuli-responsive, self-assembly, dynamics, vesicles, radical-containing copolymer, electron paramagnetic resonance



### 1. INTRODUCTION

Over the past decade, research interest in cancer treatment is growing to overcome conventional treatment defects and side effects.<sup>1</sup> In many strategies, environmentally sustainable and responsive polymeric nanocarriers are promising for better cancer treatment due to target-specific delivery of therapeutic agents and reduced side effects.<sup>2,3</sup> Hence, the functionalization capabilities of polymers make them more interesting and attractive as responsive materials in cancer therapy.<sup>4–6</sup> Stimuli-responsive supramolecular nanomaterials that respond to chemical and/or physical stimuli are called “smart” biomaterials and are versatile in their applications.<sup>7</sup> Especially, self-assembled polymer nanomaterials are of great interest and offer specific applications in biomedical fields such as high loading, prolonged circulation, transportation, and stimuli-triggered controlled release of drugs.<sup>2,8–11</sup> For this purpose, various polymer nanomaterials with morphologies of spheres, micelles, vesicles, worm-like nanostructures, tubes, etc. were used.<sup>2,8</sup> Among these nanomaterials, stimuli-responsive vesicles made from polymers, commonly called polymersomes, are a special candidate for biomedical applications, e.g., drug/gene/protein delivery, bioreactor, diagnostic imaging, and viral/cell capsid mimicry.<sup>12</sup> Vesicles show super chemical and mechanical

stability, robustness, high encapsulation efficacy of both hydrophilic and hydrophobic cargos, and bioinspired micro-environment responsiveness, which make them extremely attractive in drug delivery applications.<sup>13–17</sup> For these efforts, amphiphilic block and graft copolymers are mostly chosen.<sup>18,19</sup> However, generally, the research on vesicles constructed from amphiphilic random copolymers with stable nitroxide radical functionality is exceptional. The presence of bioinspired responsive nitroxide radical (or unpaired electron) in nanostructures makes them more attractive materials in biological systems, reducing reactive oxygen species (ROS) levels and other side effects in targeted cancer therapy.<sup>20–22</sup> Indeed, multistimuli-responsive materials have the assured potential to be used in a wide variety of applications, compared with single/dual stimuli.<sup>23</sup> Therefore, to stimulate stable radical-containing polymers in drug delivery applications, an

Received: November 9, 2021  
Accepted: November 24, 2021  
Published: December 16, 2021



Md Alim Uddin, Haojie Yu\*, Li Wang, et al. Multiple-stimuli-responsiveness and conformational inversion of smart supramolecular nanoparticles assembled from spin labeled amphiphilic random copolymers. *Journal of Colloid and Interface Science*, 2021, 585, 273-249 (影响因子 8.128)

*Journal of Colloid and Interface Science* 585 (2021) 237–249



Contents lists available at ScienceDirect

Journal of Colloid and Interface Science

journal homepage: [www.elsevier.com/locate/jcis](http://www.elsevier.com/locate/jcis)



Regular Article

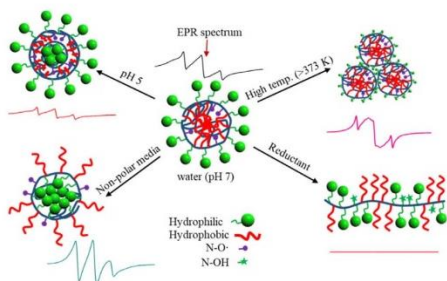
## Multiple-stimuli-responsiveness and conformational inversion of smart supramolecular nanoparticles assembled from spin labeled amphiphilic random copolymers



Md Alim Uddin, Haojie Yu\*, Li Wang, Kaleem-ur-Rahman Naveed, Bilal Ul Amin, Sahid Mehmood, Fazal Haq, Ahsan Nazir, Tengfei Lin, Xiang Chen, Zhipeng Ni

State Key Laboratory of Chemical Engineering, College of Chemical and Biological Engineering, Zhejiang University, Hangzhou 310027, Zhejiang, PR China

### GRAPHICAL ABSTRACT



### ARTICLE INFO

#### Article history:

Received 19 August 2020  
Revised 7 November 2020  
Accepted 9 November 2020  
Available online 19 November 2020

#### Keywords:

Electron paramagnetic resonance  
Amphiphilic random copolymer  
Self-assembly  
Stimuli-responsiveness  
Conformational inversion

### ABSTRACT

**Hypothesis:** Organic radical polymers with tailored pendant functionalities have emerged as exciting and promising materials for their application versatility. Moreover, eco-friendly polymer-based organic nanomaterials with redox-active pendant side groups can replace the harmful heavy metal-based inorganic materials. On the other hand, self-assembled nanomaterials are of great interest and attracted more attention recently for their promising application in different advanced fields, but it is yet challenging to predict suitable hydrophilic-lipophilic balance (HLB) for stimuli-responsive random copolymers assembly due to structural irregularity. Among several experimental techniques, electron paramagnetic resonance (EPR) spectroscopy plays a unique and promising role in revealing structural and dynamic information of nanostructured radical containing materials.

**Experiments:** In this study, a series of spin labeled amphiphilic random copolymers poly(methyl methacrylate-co-acrylic acid) have been synthesized and characterized by FT-IR, UV-Vis spectroscopies, TGA, DSC and water contact angle (CA) techniques. Their electrochemical properties have been determined by cyclic voltammetry (CV) in different organic solvents. EPR spectroscopy has been applied with other analytical techniques to elucidate the smart supramolecular nanoparticles (SNPs) formation,

**Abbreviations:** HLB, hydrophilic-lipophilic balance; CA, contact angle; CV, cyclic voltammetry; EPR, electron paramagnetic resonance; SNPs, smart supramolecular nanoparticles; ROS, reactive oxygen species; SL, spin label; CW, continuous wave; TMS, tetramethylsilane; GPC, gel permeation chromatography; GC, glassy carbon; DLS, dynamic light scattering;  $\tau_c$ , rotational correlation times;  $a_N$ , hyperfine splitting constants;  $\epsilon$ , anisotropy parameter;  $I_{pa}$ , anodic (oxidation) peak current;  $I_{pc}$ , cathodic (reduction) peak current; AC, ascorbic acid.

\* Corresponding author.

E-mail addresses: [hjyu@zju.edu.cn](mailto:hjyu@zju.edu.cn), [hodgeyu@163.com](mailto:hodgeyu@163.com) (H. Yu).

<https://doi.org/10.1016/j.jcis.2020.11.042>  
0021-9797/© 2020 Elsevier Inc. All rights reserved.

---

### 3. 留学研究生发表的部分 SCI 收录论文目录

[1] Md Alim Uddin, Haojie Yu\*, Li Wang, Bilal Mehmood, Ruixue Liang, Fazal Haq, Jian Hu, Jinming Xu. Dynamics in controllable stimuli-responsive self-assembly of polymer vesicles with stable radical functionality. *ACS Applied Materials & Interfaces*, 2021, 13, 61693-61706. **(SCI)**

[2] Md Alim Uddin, Haojie Yu\*, Li Wang, Kaleem-ur-Rahman Naveed, Bilal Ul Amin, Sahid Mehmood, Fazal Haq, Ahsan Nazir, Tengfei Lin, Xiang Chen, Zhipeng Ni. Multiple-stimuli- responsiveness and conformational inversion of smart supramolecular nanoparticles assembled from spin labeled amphiphilic random copolymers. *Journal of Colloid and Interface Science*, 2021, 585, 273-249. **(SCI)**

[3] Rizwan Ullah Khan, Li Wang, Haojie Yu, Zain-ul-Abdin, Fazal Haq, Muhammad Haroon, Kaleem-ur-Rehman Naveed, Tarig Elshaarani, Shah Fahad, Sicong Ren, Jun Wang. Synthesis of polyorganophosphazenes and fabrication of their blend microspheres and micro/nanofibers as drug delivery systems. *Int. J. Polym. Mater. Po.* 2020;69(9):545-566. **(SCI)**

[4] Fazal Haq, Haojie Yu, Yang Wang, Li Wang, Muhammad Haroon, Amin Khan, Sahid Mehmood, Bilal Ul Amin, Tengfei Lin. Synthesis of carboxymethyl starch grafted poly (methacrylic acids) (CMS-g-PMAAs)

---

and their application as an adsorbent for the removal of ammonia and phenol. *J. Mol. Struct.* 2020;1207. **(SCI)**

[5] Rizwan Ullah Khan, Haojie Yu, Li Wang, Qian Zhang, Wei Xiong, Zain-ul-Abdin, Ahsan Nazir, Shah Fahad, Xiang Chen, Tarig Elshaarani. Synthesis of polyorganophosphazenes and preparation of their polymersomes for reductive/acidic dual-responsive anticancer drugs release. *J. Mater. Sci.* 2020;55(19):8264-8284. **(SCI)**

[6] Shah Fahad, Haojie Yu, Li Wang, Yang Wang, Tarig Elshaarani, Rizwan Ullah Khan, Kaleem-ur-Rehman Naveed, Rizwan Ullah Khan, Sahid Mehmood, Fazal Haq, Zhipeng Ni, Muhammad Usman. Synthesis of corrugated surface AgNWs and their applications in surface enhanced Raman spectroscopy. *Crystengcomm.* 2020;22(12):2183-2196. **(SCI)**

[7] Tarig Elshaarani, Haojie Yu, Li Wang, Long Lin, Nan Wang, Kaleem-ur-Rehman Naveed, Li Zhang, Yin Han, Shah Fahad, Zhipeng Ni. Dextran-crosslinked glucose responsive nanogels with a self-regulated insulin release at physiological conditions. *Eur. Polym. J.* 2020;125. **(SCI)**

[8] Ahsan Nazir, Haojie Yu, Li Wang, Jinhua Liu, Songbiao Li, Bilal Ul Amin, Kaleem-ur-Rehman Naveed, Rizwan Ullah Khan, Amin Khan, Muhammad Usman, Tarig Elshaarani, Md Alim Uddin. Electromagnetic interference shielding effectiveness of ferrocene-based

---

polyimidazole/carbon material composites. *Polym Compos.* 2020, 1-14.

**(SCI)**

[9] Fazal Haq, Haojie Yu, Li Wang, Lisong Teng, Muhammad Haroon, Rizwan Ullah Khan, Sahid Mehmood, Bilal Ul Amin, Raja Summe Ullah, Amin Khan, Ahsan Nazir. Advances in chemical modifications of starches and their applications. *Carbohydr. Res.* 2019, 476, 12-35. **(SCI)**

[10] Kaleem-ur-Rehman Naveed, Li Wang, Haojie Yu, Raja Summe Ullah, Ahsan Nazir, Shah Fahad, Tarig Elshaarani, Muhammad Usman, Amin Khan. Synthesis of spin-labelled poly(acrylic acid)s and their segmental motion study. *Mol. Phys.* 2019. **(SCI)**

[11] Amin Khan, Haojie Yu, Li Wang, Pavel A. Zhizhko, Dmitry N. Zarubin, Dmitry A. Lemenovskiy, Fazal Haq, Muhammad Usman, Ahsan Nazir, Kaleem-ur-Rehman Naveed. Synthesis of ferrocene and azobenzene-based copolymers P(FHEMA-*co*-MAZOHE)s and their redox and photo-responsive properties. *J. Organomet. Chem.* 2019, 895, 37-47. **(SCI)**

[12] Ahsan Nazir, Haojie Yu, Li Wang, Shah Fahad, Kaleem-ur-Rahman Naveed, Amin Khan, Bilal Ul Amin, Tengfei Lin, Muhammad Usman, Tarig Elshaarani, Fazal Haq. Electrical conductivity and electromagnetic interference shielding properties of polymer/carbon composites. *J. Mater. Sci.-Mater. El.* 2019, 30, 16636-16650. **(SCI)**

---

[13] Muhammad Haroon, Haojie Yu, Li Wang, Raja Summe Ullah, Fazal Haq, Lisong Teng. Synthesis and characterization of carboxymethyl starch-g-polyacrylic acids and their properties as adsorbents for ammonia and phenol. *Int. J. Biol. Macromol.* 2019, 138, 349-358. **(SCI)**

[14] Tarig Elshaarani, Haojie Yu, Li Wang, Raja Summe Ullah, Shah Fahad, Kaleem-ur-Rahman, Amin Khan, Ahsan Nazir, Muhammad Usman, Rizwan Ullah Khan, Fazal Haq, Ruixue Liang, Xiang Chen, Muhammad Haroon. Glucose-responsive nanostructured hydrogels with enhanced elastic and swelling properties. *J. Mater. Sci.* 2019, 54, 10009-10023. **(SCI)**

[15] Muhammad Usman, Li Wang, Haojie Yu, Fazal Haq, Ruixue Liang, Raja Summe Ullah, Amin Khan, Ahsan Nazir, Tarig Elshaarani, Kaleem-ur-Rehman Naveed. Synthesis, anti-migration properties and burning rate catalytic properties of ferrocene-based compounds. *Inorg. Chim. Acta*, 2019, 495, 118958. **(SCI)**

[16] Shah Fahad, Haojie Yu, Li Wang, Ahsan Nazir, Raja Summe Ullah, Kaleem-ur-Rahman Naveed, Tarig Elshaarani, Bilal Ul Amin, Amin Khan, Sahid Mehmood. Synthesis of silver nanowires with controlled diameter and their conductive thin films. *J. Mater. Sci.-Mater. El.* 2019, 30, 12876-12887. **(SCI)**

[17] Amin Khan, Li Wang, Haojie Yu, Muhammad Haroon, Raja Summe Ullah, Ahsan Nazir, Tarig Elshaarani, Muhammad Usman, Shah

---

Fahad, Kaleem-ur-Rehman Naveed. Synthesis and properties of stimuli-responsive ferrocene and azobenzene-based copolymers P(FHEMA-*co*-MAAT)s. *J. Organomet. Chem.* 2019, 880, 124-133. (SCI)

[18] Raja Summe Ullah, Li Wang, Haojie Yu, Muhammad Haroon, Tarig Elshaarani, Kaleem-ur-Rehman Naveed, Shah Fahad, Amin Khan, Ahsan Nazir, Xia Xia, Lisong Teng. Synthesis of polyphosphazene and preparation of microspheres from polyphosphazene blends with PMMA for drug combination therapy. *J. Mater. Sci.* 2019;54(1):745-764. (SCI)

[19] Shah Fahad, Haojie Yu, Li Wang, Zain-ul-Abdin, Muhammad Haroon, Raja Summe Ullah, Ahsan Nazir, Kaleem-ur-Rehman Naveed, Tarig Elshaarani, Amin Khan. Recent progress in the synthesis of silver nanowires and their role as conducting materials. *J. Mater. Sci.* 2019;54(2):997-1035. (SCI)

[20] Rizwan Ullah Khan, Li Wang, Haojie Yu, Zain-ul-Abdin, Fazal Haq, Muhammad Haroon, Kaleem-ur-Rehman Naveed, Tarig Elshaarani, Shah Fahad, Sicong Ren, Jun Wang. Synthesis of polyorganophosphazenes and fabrication of their blend microspheres and micro/nanofibers as drug delivery systems. *Int. J. polym. Mater. Polym. Biomater.* 2019, 1-22. (SCI)

[21] Amin Khan, Haojie Yu, Yang Wang, Li Wang, Raja Summe Ullah, Fazal Haq, Tarig Elshaarani, Muhammad Usman, Ahsan Nazir, Kaleem-ur-Rehman Naveed. Synthesis of

---

P(FHEMA-*co*-MAZO-*co*-MAA)s copolymers and their redox and photo-responsive properties. *J. Organomet. Chem.* 2019, 902, 120955. **(SCI)**

[22] Muhammad Saleem, Li Wang, Haojie Yu, Zain-ul-Abdin. Synthesis of ferrocene boronic acid-based block copolymers via RAFT polymerization and their micellization, redox responsive and glucose sensing properties. *Arab. J. Chem.* 2019, 12, 800-815. **(SCI)**

[23] Rizwan Ullah Khan, Li Wang, Haojie Yu, Zain-ul-Abdin, Muhammad Akram, Jialiang Wu, Muhammad Haroon, Raja Summe Ullah, Zheng Deng, Xia Xia. Poly(organo)phosphazenes: recent progress in the synthesis and applications in tissue engineering and drug delivery. *Russ. Chem. Rev.* 2018, 87(2), 109-150. **(SCI)**

[24] Zain-ul-Abdin, Li Wang, Haojie Yu, Rizwan Ullah Khan, Raja Summe Ullah, Muhammad Haroon. Tris(2-aminoethyl) amine based ferrocene terminated dendrimers as burning rate catalysts for ammonium perchlorate based propellant decomposition. *Appl. Organomet. Chem.* 2018, 32(4), e4268. **(SCI)**

[25] Muhammad Haroon, Li Wang, Haojie Yu, Raja Summe Ullah, Zain-ul-Abdin, Rizwan Ullah Khan, Qing Chen, Jian Liu. Synthesis of carboxymethyl starch-*g*-polyvinylpyrrolidones and their properties for the adsorption of Rhodamine 6G and ammonia. *Carbohydr. Polym.* 2018, 186, 150-158. **(SCI)**

---

[26] Ahsan Nazir, Haojie Yu, Li Wang, Muhammad Haroon, Raja Summe Ullah, Shah Fahad, Kaleem-ur-Rahman Naveed, Tarig Elshaarani, Amin Khan, Muhammad Usman. Recent progress in the modification of carbon materials and their application in composites for electromagnetic interference shielding. *J. Mater. Sci.* 2018, 53 (12), 8699-8719. **(SCI)**

[27] Tarig Elshaarani, Haojie Yu, Li Wang, Zain-ul-Abdin, Raja Summe Ullah, Muhammad Haroon, Rizwan Ullah Khan, Shah Fahad, Amin Khan, Ahsan Nazir, Muhammad Usman, Kaleem-ur-Rahman Naveed. Synthesis of hydrogel-bearing phenylboronic acid moieties and their applications in glucose sensing and insulin delivery. *J. Mater. Chem. B*, 2018, 6(23), 3831-3854. **(SCI)**

[28] Kaleem-ur-Rahman Naveed, Li Wang, Haojie Yu, Raja Summe Ullah, Muhammad Haroon, Shah Fahad, Jiyang Liu, Tarig Elshaarani, Rizwan Ullah Khan, Ahsan Nazir. Recent progress in the electron paramagnetic resonance study of polymers. *Polym. Chem.* 2018, 9(24), 3306-3335. **(SCI)**

[29] Muhammad Usman, Li Wang, Haojie Yu, Fazal Haq, Muhammad Haroon, Raja Summe Ullah, Amin Khan, Shah Fahad, Ahsan Nazir, Tarig Elshaarani. Recent progress on ferrocene-based burning rate catalysts for propellant applications. *J. Organomet. Chem.* 2018, 872, 40-53. **(SCI)**

---

[30] Amin Khan, Li Wang, Haojie Yu, Muhammad Haroon, Raja Summe Ullah, Ahsan Nazir, Tarig Elshaarani, Muhammad Usman, Shah Fahad, Fazal Haq. Research advances in the synthesis and applications of ferrocene-based electro and photo responsive materials. *Appl. Organomet. Chem.* 2018, 32(12), e4575. **(SCI)**

[31] Muhammad Saleem, Li Wang, Haojie Yu, Zain-ul-Abdin, Muhammad Akram, Raja Summe Ullah. Synthesis of amphiphilic block copolymers containing ferrocene-boronic acid and their micellization, redox-responsive properties and glucose sensing. *Colloid Polym.Sci.* 2017, 295(6), 995-1006. **(SCI)**

[32] Zain-ul-Abdin, Li Wang, Haojie Yu, Muhammad Saleem, Muhammad Akram, Hamad Khalid, Nasir M. Abbasi, Rizwan Ullah Khan. Synthesis and catalytic performance of ferrocene-based compounds as burning rate catalysts. *Appl. Organomet. Chem.* 2017, 31, e3754. **(SCI)**

[33] Zain-ul-Abdin, Li Wang, Haojie Yu, Muhammad Saleem, Muhammad Akram, Hamad Khalid, Nasir M. Abbasi, Xianpeng Yang. Synthesis of ethylene diamine-based ferrocene terminated dendrimers and their application as burning rate catalysts. *J. Colloid Interf. Sci.* 2017, 487, 38-51. **(SCI)**

[34] Raja Summe Ullah, Li Wang, Haojie Yu, Nasir M. Abbasi, Muhammad Akram, Zain-ul-Abdin, Muhammad Saleem, Muhammad

---

Haroon, Rizwan Ullah Khan. Synthesis of polyphosphazenes with different side groups and various tactics for drug delivery. *RSC Adv.* 2017, 7, 23363-23391. **(SCI)**

[35] Zain-ul-Abdin, Li Wang, Haojie Yu, Muhammad Saleem, Nasir M. Abbasi, Rizwan Ullah Khan, Raja Summe Ullah, Muhammad Haroon. Synthesis of ferrocene-based saccharides and their anti-migration and burning rate catalytic properties. *RSC Adv.* 2016, 6, 97469-97481. **(SCI)**

[36] Muhammad Saleem, Haojie Yu, Li Wang, Zain-ul-Abdin, Muhammad Akram, Nasir M. Abbasi, Yongsheng Chen. Study on synthesis of ferrocene-based boronic acid derivatives and their saccharides sensing properties. *J. Electroanal. Chem.* 2016, 763, 71-78. **(SCI)**

[37] Muhammad Haroon, Li Wang, Haojie Yu, Nasir M. Abbasi, Zain-ul-Abdin, Muhammad Saleem, Rizwan Ullah Khan, Raja Summe, Qing Chen, Jialiang Wu. Chemical modification of starch and its application as an adsorbent material. *RSC Adv.* 2016, 6(82), 78264-78285. **(SCI)**

[38] Zain-ul-Abdin, Li Wang, Haojie Yu, Muhammad Saleem, Muhammad Akram, Nasir M. Abbasi, Hamad Khalid, Ruoli Sun, Yongsheng Chen. Ferrocene-based polyethyleneimines for burning rate catalysts. *New J. Chem.* 2016, 40(4), 3155-3163. **(SCI)**

---

[39] Nasir M. Abbasi, L Wang, Haojie Yu, Zain-ul-Abdin, Muhammad Akram, Hamad Khalid, Yongshen Chen, Ruoli Sun, Muhammad Saleem, Zheng Deng. Glycerol and water mediated synthesis of silver nanowires in the presence of cobalt chloride as growth promoting additive. *J. Inorg. Organomet. Polym. Mater.* 2016, 26(3), 680-690. **(SCI)**

[40] Muhammad Akram, Haojie Yu, Li Wang, Hamad Khalid, Nasir M. Abbasi, Zain-ul-Abdin, Yongsheng Chen, Fujie Ren, Muhammad Saleem. Sustained release or hydrophilic from polyphosphazenes/poly(methyl methacrylate) based microspheres and their degradation study. *Mater. Sci. Eng. C*, 2016, 58, 169-179. **(SCI)**

[41] Muhammad Akram, Li Wang, Haojie Yu, Hamad Khalid, Nasir M. Abbasi, Zain-ul-Abdin, Yongsheng Chen, Ruoli Sun, Jie Shan, Muhammad Saleem. Synthesis of reductive responsive polyphosphazenes and their fabrication nanocarriers for drug delivery application. *Int. J. Polym. Mater. Polym. Biomater.* 2016, 65(11), 581-591. **(SCI)**

[42] Muhammad Saleem, Haojie Yu, Li Wang, Zain-ul-Abdin, Hamad Khalid, Muhammad Akram, Nasir M. Abbasi, Jin Huang. Review on synthesis of ferrocene-based redox polymers and derivatives and their application in glucose sensing. *Anal. Chim. Acta*, 2015, 876, 9-25. **(SCI)**

[43] Nasir M. Abbasi, Haojie Yu, Li Wang, Zain-ul-Abdin, Wael A. Amer, Muhammad Akram, Hamad Khalid, Yongsheng Chen, Muhammad

---

Saleem, Ruoli Sun, Jie Shan. Preparation of silver nanowires and their application in conducting polymer nanocomposites. *Mater. Chem. Phys.* 2015, 166, 1-15. **(SCI)**

[44] Hamad Khalid, Li Wang, Haojie Yu, Muhammad Akram, Nasir M. Abbasi, Ruoli Sun, Muhammad Saleem, Zain-ul-Abdin, Yongsheng Chen. Synthesis of soluble ferrocene-based polythiophenes and their properties. *J. Inorg. Organomet. Polym. Mater.* 2015, 25(6), 1511-1520. **(SCI)**

[45] Muhammad Akram, Li Wang, Haojie Yu, Wael A. Amer, Hamid Khalid, Nasir M. Abbasi, Yongsheng Chen, Zain-ul-Abdin, Muhammad Saleem, Rongbai Tong. Polyphosphazenes as anti-cancer drug carriers: From synthesis to application. *Prog. Polym. Sci.* 2014, 39(12), 1987-2009. **(SCI)**

[46] Hamad Khalid, Haojie Yu, Li Wang, Wael A. Amer, Muhammad Akram, Nasir M. Abbasi, Zain-ul-Abdin, Muhammad Saleem. Synthesis of ferrocene-based polythiophenes and their applications. *Polym. Chem.* 2014, 5(24), 6879-6892. **(SCI)**

[47] Zain-ul-Abdin, Haojie Yu, Li Wang, Muhammad Saleem, Hamad Khalid, Nasir M. Abbasi, Muhammad Akram. Synthesis, anti-migration and burning rate catalytic mechanism of ferrocene-based compounds. *Appl. Organomet. Chem.* 2014, 28(8), 567-575. **(SCI)**

---

[48] Wael A. Amer, Haojie Yu, Li Wang, Sergey Vatsadze, Rongbai Tong. Synthesis, characterization and properties of some main-chain ferrocene-based polymers containing aromatic units. *Inorg. Organomet. Polym.* 2013, 23, 1431-1444. **(SCI)**

[49] Wael A. Amer, Li Wang, Abid M. Amin, Haojie Yu, Lei Zhang, Chao Li, Yang Wang. Liquid-crystalline azobenzene-containing ferrocene-based polymers: Study on synthesis and properties of main-chain ferrocene-based polyesters with azobenzene in the side chain. *Polym. Adv. Technol.* 2013, 24, 181-190. **(SCI)**

[50] Wael A. Amer, Li Wang, Abid Muhammad Amin, Haojie Yu, Chao Li, Liang Ma. Study on the electrochemical, thermal, and liquid crystalline properties of poly(diethyleneglycol-1,1'-ferrocene dicarboxylate). *Des. Monomers Polym.* 2013, 16, 160-169. **(SCI)**

[51] Wael A. Amer, Li Wang, Haojie Yu, Abid Muhammad Amin, Yang Wang. Synthesis and properties of a Ferrocene-based metallomesogenic polymer containing bis(4-hydroxyoctoxyphenyl) sulfone. *J. Inorg. Organomet. Polym. Mater.* 2012, 22(6), 1229-1239. **(SCI)**

[52] Abid Muhammad Amin, Li Wang, Haojie Yu, Wael A. Amer, Jingmin Gao, Jia Huo, Yulei Tai, Lei Zhang. Synthesis and characterization of poly[bis(ethyl salicylate)phosphazenes] and poly[bis(ethyl salicylate diethylamino) phosphazenes] and their

---

hydrolytic degradation. *J. Inorg. Organomet. Polym. Mater.* 2012, 22(1), 196-204. **(SCI)**

[53] Abid M. Amin, Li Wang, Jianjun Wang, Wael A. Amer, Jia Huo, Haojie Yu, Jingmin Gao. Synthesis and characterization of poly[bis(resorcinol monobenzoate) phosphazenes and poly[bis(resorcinol monobenzoate diethylamino) phosphazenes and their self-assembly behaviors. *J. Inorg. Organomet. Polym.* 2011, 21,283-290. **(SCI)**

[54] Abid M. Amin, Li Wang, Haojie Yu, Wael A. Amer, Jingmin Gao, Yulei Tai, Huo Jia, Yan Zhang, Lei Zhang. Synthesis and characterization of poly[bis(p-oxybenzaldehyde diethylamino) phosphazenes], poly(p-oxybenzaldehyde) phosphazenes], poly[bis(diethylamino) phosphazenes] and their self-assembly behaviors. *J. Macromol. Sci. Pure*, 2011, 48, 937-946. **(SCI)**

[55] Wael A. Amer, Li Wang, Abid Muhammad Amin, Liang Ma, Haojie Yu. Recent progress in the synthesis and applications of some ferrocene derivatives and ferrocene-based polymers. *J. Inorg. Organomet. Polym.* 2010, 20, 605-615. **(SCI)**

[56] Abid Muhammad Amin, Li Wang, Jianjun Wang, Haojie Yu, Jingmin Gao, Chao Li, Jia Huo, Wael A. Amer, Guangqing Yan, Liang Ma. Recent research progress in the synthesis of polyphosphazene elastomers and their applications. *Polym-Plast. Technol. Eng.* 2010, 49(14), 1399-1405. **(SCI)**

---

[57] Abid Muhammad Amin, Li Wang, Jianjun Wang, Haojie Yu, Jia Huo, Jingmin Gao, Anguo Xiao. Recent research progress in the synthesis of polyphosphazene and their applications. *Des. monomers polym.* 2009, 12, 357-375. **(SCI)**

[58] Asim Mushtaq, Yike Hou, Cong Tian, Tianhao Deng, Changliang Xu, Zhichao Sun, Xiangdong Kong, M. Zubair Iqbal. Facile synthesis of Mn doped TiO<sub>2</sub> rhombic nanocomposites for enhanced T1-Magnetic resonance imaging and photodynamic therapy. *Mater. Res. Bull.* 2021, 144, 111481. **(SCI)**

[59] Asim Mushtaq, Ruibo Zhao, Dandan Luo, Eithne Dempsey, Xiumei Wang, M. Zubair Iqbal, Xiangdong Kong. Magnetic hydroxyapatite nanocomposites: The advances from synthesis to biomedical applications. *Mater. Des.* 2021, 197, 109269. **(SCI)**

[60] Uwamahoro Evariste, Guohua Jiang, Bo Yu, Yongkun Liu, Zheng Huang, Qiuling Lu, Pianpian Ma. Hierarchical mesoporous Zn-Ni-Co-S microspheres grown on reduced graphene oxide/nickel foam for asymmetric supercapacitors. *J. Mater. Res.* 2019, 34(14), 2445-2455. **(SCI)**

[61] Uwamahoro Evariste, Guohua Jiang, Bo Yu, Yongkun Liu, Pianpian Ma. Electrodeposition of manganese-nickel-cobalt sulfides on reduced graphene oxide/nickel foam for high-performance asymmetric supercapacitors. *J. Electro. Mater.* 2020, 49(2), 922-930. **(SCI)**

---

[62] Uwamahoro Evariste, Guohua Jiang, Bo Yu, Yongkun Liu, Pianpian Ma. One-step electrodeposition of molybdenum nickel cobalt sulfide on Ni foam for high-performance asymmetric supercapacitors. *J. Energy Storage* 2020, 29, 101419. **(SCI)**

[63] Sophie Nieuwenhuis, Qi Zhong, Ezzeldin Metwalli, Lorenz Bießmann, Martine Philipp, Anna Miasnikova, AndréLaschewsky, Christine M. Papadakis, Robert Cubitt, Jiping Wang, Peter Müller-Buschbaum. Hydration and dehydration kinetics: comparison between poly(N-isopropyl methacrylamide) and poly(methoxy diethylene glycol acrylate)films. *Langmuir* 2019, 35, 7691-7702. **(SCI)**

[64] Somia Yassin Hussain Abdalkarim, Hou-Yong Yu, Duanchao Wang, Juming Yao. Electrospun poly (3-hydroxybutyrate-co-3-hydroxyvalerate)/cellulose reinforced nanofibrous membranes with ZnO nanocrystals for antibacterial wound dressings. *Cellulose* 2017, 24, 2925-2938. **(SCI)**

[65] Somia Yassin Hussain Abdalkarim, Hou-Yong Yu, Chuang Wang, Lin-Xi Huang, Juming Yao. Green synthesis of sheet-like cellulose nanocrystal–zinc oxide nanohybrids with multifunctional performance through one-step hydrothermal method. *Cellulose* 2018, 25, 6433-6446. **(SCI)**

[66] Somia Yassin Hussain Abdalkarim, Hou-Yong Yu, Chuang Wang, Lili Yang, Ying Guan, Linxi Huang, Juming Yao. Sheet-like

---

cellulose nanocrystal-ZnO nanohybrids as multifunctional reinforcing agents in biopolyester composite nanofibers with ultrahigh UV-Shielding and antibacterial performances. *ACS Appl. Bio Mater.* 2018, 1, 714-727.

**(SCI)**

[67] Somia Yassin Hussain Abdalkarim, Hou-Yong Yu, Mei-Li Song, Ying Zhou, Juming Yao, Qing-Qing Ni. In vitro degradation and possible hydrolytic mechanism of PHBV nanocomposites by incorporating cellulose nanocrystal-ZnO nanohybrids. *Carbohydr. Polym.* 2017, 176,

38-49. **(SCI)**

[68] Hou-Yong Yu, Chuang Wang, Somia Yassin Hussain Abdalkarim. Cellulose nanocrystals/polyethylene glycol as bifunctional reinforcing/compatibilizing agents in poly (lactic acid) nanofibers for controlling long-term in vitro drug release. *Cellulose* 2017,

24, 4461-4477. **(SCI)**

[69] Arain Muhammad Fahad, Wang Mingxue, Chen Jianyong, Zhang Huapeng. Study on PVA fiber surface modification for strain-hardening cementitious composites (PVA-SHCC). *Constr. Build. Mater.* 2019, 197, 107-116. **(SCI)**

**(SCI)**

[70] Arain Muhammad Fahad, Wang Mingxue, Chen Jianyong, Zhang Huapeng. Experimental and numerical study on tensile behavior of surface modified PVA fiber reinforced strain-hardening cementitious

---

composites (PVA-SHCC). *Constr. Build. Mater.* 2019, 217, 403-415.

(SCI)

[71] Kyampete Tyty, 刘赋瑶, 傅雅琴. 发泡剂对 3D 玻纤织物增强发泡聚氨酯复合材料力学性能的影响. *现代纺织技术*, 2020, 28(04), 1-6.

[73] Sajib Kumar Paul, 张鲁燕, 刘珈利, 梁明进, 田伟, 祝成炎. Jamdani 纱丽的自动化织造研究. *丝绸*, 2019, 56(07), 65-69.

[74] MD Ali Hossain, 陈维国, 王成龙, 金淑兰, 吴浩, 张亚. 氧等离子体处理对涤纶织物数码转移印花的作用. *现代纺织技术* 2020,28(02),70-75+84.