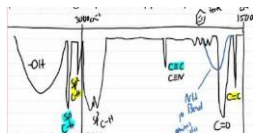
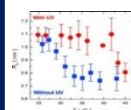
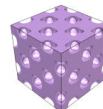
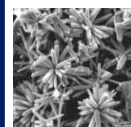
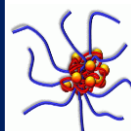
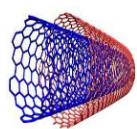
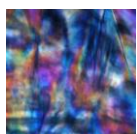
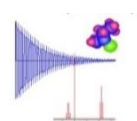
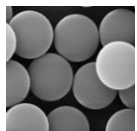
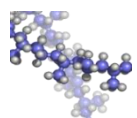
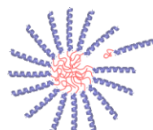
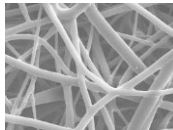
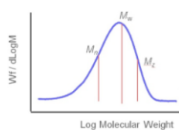


ДЕСЕТА ЮБИЛЕЙНА НАУЧНА СЕСИЯ „МЛАДИТЕ УЧЕНИ В СВЕТА НА ПОЛИМЕРИТЕ“

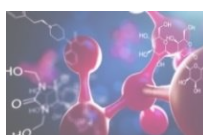
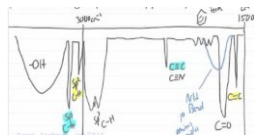
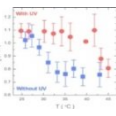
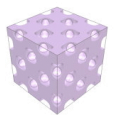
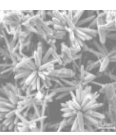
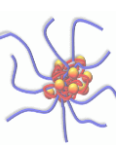
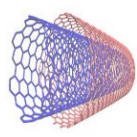
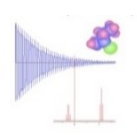
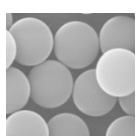
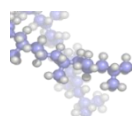
6 юни 2019 г.
гр. София

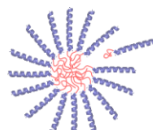
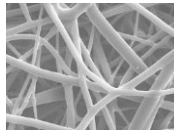
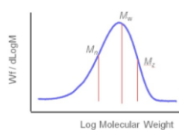
Сесията е посветена на 150 години БАН





Научната сесия “Младите учени в света на полимерите” е организирана за първи път през 2009г. в изпълнение на дейностите по проект “Подкрепа за развитие и реализация на докторанти, пост-докторанти и млади учени в областта на полимерната химия, физика и инженерство” (BG051PO001/07/3.3-02-051). След приключване на проекта ръководството на Института по полимери решава да продължи организирането ѝ давайки поле за изява на млади изследователи работещи в областта на полимерната наука. Форумът придобива популярност и вече десет години събира млади хора с научни и приложни постижения в различни сфери неизменно свързани със “света на полимерите”



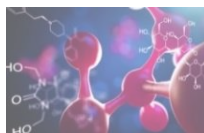
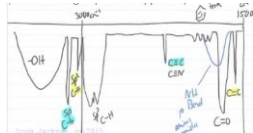
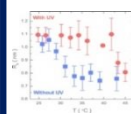
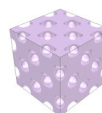
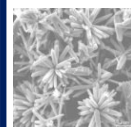
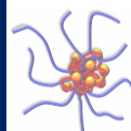
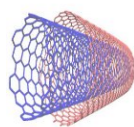
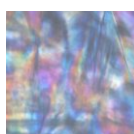
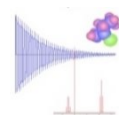
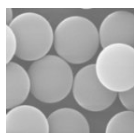
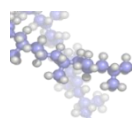


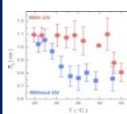
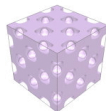
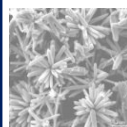
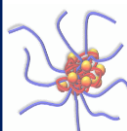
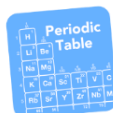
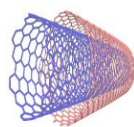
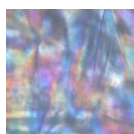
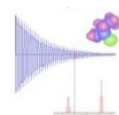
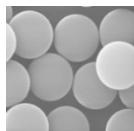
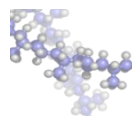
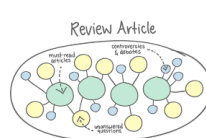
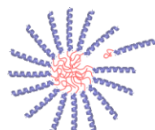
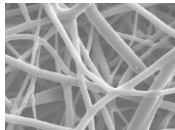
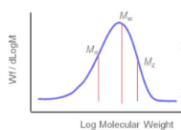
Програма

- 10:00 ч. – 10:20 ч. *Откриване*
- 10:20 ч. – 11:00 ч. *Доклад на проф. Николай Царевски - гост лектор на научната сесия „Функционални свърхразклонени полимери: синтез и приложение“*
- 11:00 ч. – 11:20 ч. *Кафе пауза*
- 11:20 ч. – 12:30 ч. *Представяне на доклади*
- 12:30 ч. – 14:00 ч. *Почивка*
- 14:00 ч. – 16:00 ч. *Представяне на постери*
- 16:00 ч. – 16:15 ч. *Награждаване на отличени доклади и постери*
- 16.15ч. *Закриване и коктейл*

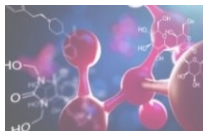
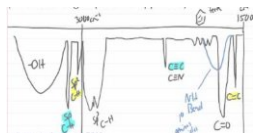
Място на провеждане

*Заседателна зала на Институт по полимери, БАН
ул. Акад. Г. Бончев, бл. 103-В, гр. София*





СПИСЪК НА УЧАСТНИЦИТЕ



Доклади

1. *„Моделиране на водна адсорбция при олигоанилин“*

Жасмина Петрова

Факултет по химия и фармация, Софийски университет „Св. Климент Охридски“

2. *„HDMI-полифосфорамидатни гликохидрогелове с биоразпознавателни свойства и потенциално антибактериално действие“*

Зорница Тодорова, Оюундари Тумурбаатар, Нели Косева

Институт по полимери, БАН

3. *„Полимерни криогелове, съдържащи бета-циклодекстрин за удължено доставяне на хидрофобни лекарствени вещества“*

Явор Данов, Петър Петров

Институт по полимери, БАН

Постери

1. „Color detection of humidity via double hydrophilic copolymers as sensitive media“

Катерина Лазарова¹, Росен Георгиев¹, Даринка Христова² и Цветанка Бабева¹

¹ Институт по оптични материали и технологии, Акад. “Й. Малиновски”, БАН

² Институт по полимери, БАН

2. "Star shaped PDMAEMA based polyplexes: Preparation and behavior at environmental changes"

Emilia Veleva-Kostadinova¹, Emi Haladjova¹, Athanasios Skandalis², Stergios Pispas², Stanislav Rangelov¹

¹Institute of Polymers, Bulgarian Academy of Science

²Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, Athens, Greece

3. „Тънки течни филми като инструмент за изследване на повърхностно активни вещества (ПАВ) и полимери“

Димитър Стоянов, Димитринка Арабаджиева, Елена Милева

Институт по физикохимия "Акад. Ростислав Каишев", БАН

4. „Carbon Fibre Reinforced Polymers used to repair of damaged short reinforced concrete corbel“

Пламена Денкова¹, Ивелина Иванова¹, Жул Асих²

¹Химикотехнологичен и металургичен университет, София

²Университета в Реймс Шампан-Арден, Франция

5. „Влияние на сферични нуклеинови киселини от поли(етоксиетил глицидилов етер)-олигонуклеотид върху A549 и HepG2 клетки“

Кирилка Младенова¹, Павел Бакърджиев², Павел Видев¹, Ралица Велева¹, Светла Петрова¹, Таня Топузова-Христова¹, Веселина Московска-Думанова¹, Наталия Тончева-Мончева², Йордан Думанов¹, Станислав Рангелов²

¹ Биологически факултет, СУ „Св. Климент Охридски“

² Институт по Полимери, БАН

6. „Investigation on the self – assembly behavior of novel pH – sensitive fluorescence polymeric micelles“

N. Filipova, S. Ismail, R. Bryaskova

Химикотехнологичен и металургичен университет, София

7. „Физико-химично охарактеризиране на биоразградими съполиестер-амиди“

Владислава Иванова*, Наталия Тончева-Мончева**, Вяра Ангелова*, Весела Стоянова*,

Траяна Трифонова*, Йорданка Трифонова*

*Химикотехнологичен и металургичен университет, София

**Институт по Полимери – БАН

8. „Иновативни подходи за подобряване на механичните свойства на влакнести материали“

Владимир Кръстев, Оля Стоилова, Невена Манолова, Илия Рашков

Институт по полимери, БАН

9. „Функционални амфибилни блокови съполимери: свойства на водни разтвори и оценка на потенциала им като носители на фенетилов естер на кафеена киселина“

Мирослава Вълчанова^{1,2}, Севдалина Турманова², Станислав Рангелов¹, Емилия Иванова²

¹Институт по полимери, БАН

²Университет "Проф. д-р Асен Златаров", Бургас

10. „Рециклиране на отпадъчни полимери (PS, PET, PC) чрез електроразпръскване“

Радослав Ангелов, Биляна Георгиева, Даниела Карашанова

Институт по оптически материали и технологии – БАН

11. „Temperature-responsive properties of poly(N-isopropylacrylamide) copolymers in aqueous solution: influence of macromolecular architecture“

Silvia Bozhilova, Sijka Ivanova, Christo Novakov, Darinka Christova

Институт по полимери – БАН

12. „Preparation and investigation of oligomeric structure/ZnO nanocomposite powder“

Silvia Dimova¹, Katerina Zaharieva², Hristo Penchev¹, Filip Ublekov¹, Mariya Kyulavska¹, Irina Stambolova³

¹Институт по полимери – БАН

²Институт по катализ – БАН

³Институт по обща и неорганична химия – БАН

13. „Fluorescence sensing polymer micelles with embedded 1,8 - naphthalimide units“

Selen Ismail, Nikoleta Filipova, Rayna Bryaskova

Химикотехнологичен и металургичен университет- София

14. „Получаване и свойства на нови полимерни материали с антиоксидантни свойства, съдържащи кверцетин“

Н. Стоянова, М. Спасова, Н. Манолова, И. Рашков

Институт по полимери – БАН

15. „Съполимерни хидрогелове като трансдермални носители на кверцетин“

М. Симеонов, З. Даскалова, Х. Цачев, Е. Василева

Факултет по химия и фармация, Софийски университет „Св. Климент Охридски“

16. „Получаване и охарактеризиране на нови гликохидрогелове на основата на полифосфорамидати“

Зорница Тодорова, Оюундари Тумурбаатар, Нели Косева

Институт по полимери – БАН

17. „Cationic polymer micelles effectiveness against bacterial biofilms“

Raunova-Krasteva Ts.¹, Haladjova E.², Borisova D.¹, Stoitsova S.¹

¹Институт по микробиология „Стефан Ангелов“ – БАН

² Институт по полимери – БАН

18. „Role of ferrous ions on the biofilm formation by *Bacillus subtilis* and *Escherichia coli* K-12 strains“

Ivo Ganchev¹, Markus Maniak²

¹ The “Stephan Angeloff” Institute of Microbiology, Department of General Microbiology,

²University of Kassel, Germany

19. “Estimation of lactobacillus growth and adhesion on polymeric surface and in modified vegan media”

L. Dobрева, V. Dishliyska, T. Paunova, S. Danova

The “Stephan Angeloff” Institute of Microbiology, Department of General Microbiology

20. “In situ” UV-irradiation NMR spectroscopy as versatile tool for design of polymeric materials“

Miroslav Dangalov¹, Nikolay G. Vassilev¹, Natalia Toncheva-Moncheva², Christo Novakov²

¹Institute of Organic Chemistry with Center of Phytochemistry, BAS

²Institute of Polymers, BAS

21. “In vitro safety evaluation of caffeic acid phenethyl ester loaded PEO-PCL-PEO copolymer micelles”

Denitsa Aluani¹, Virginia Tzankova¹, Krassimira Yoncheva¹, Vassya Bankova², Mariya - Desislava Atanasova³, Georgy Grancharov³, Petar Petrov³

¹Faculty of Pharmacy, Medical University of Sofia

²Institute of Organic Chemistry with Center for Phytochemistry, BAS

³Institute of Polymers, BAS

22. “In vitro effects of cinnamyl-modified polyoxyethylene-poly(D,L-lactide)- based block copolymer micelles as drug carriers of CAPE on endothelial cells”

Yordan Yordanov¹, Virginia Tzankova¹, Krassimira Yoncheva¹, Vassya Bankova², Radostina Kalinova³, Ivaylo Dimitrov³

¹Faculty of Pharmacy, Medical University of Sofia

²Institute of Organic Chemistry with Center for Phytochemistry, BAS

³Institute of Polymers, BAS

23. *“Синтез, функционализиране и охарактеризиране на диблоков съполимер с присадени цинамилни звена- поли[етилен оксид-блок-(α -цинамил- ϵ -капролактон)-съ-(ϵ -капролактон)]”*

Мария-Десислава Атанасова, Георги Грънчаров, Валерия Ганчева, Петър Петров

Институт по полимери, БАН

24. *„Polymer solar cells based on PTB7-Fx prepared in environmental and inert glove-box conditions“*

Maria-Desislava Atanasova¹, Georgy Grancharov¹, Valeria Gancheva¹, Radostina Kalinova¹, Petar Petrov¹, Ely Lazarova², Rositsa Gergova², Christosko Dikov², Georgi Popkirov², Marushka Sendova-Vassileva²

¹Institute of Polymers, BAS

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25. *„Хидрогелове на поли (сулфобетаин метакрилат) с потенциално приложение като превръзки за рани с протеолитично действие“*

Д. Николова^{1,2}, И. Цачева², Е. Стоянова², К. Русева¹, В. Митова², Е. Василева¹, Н. Косева²

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26. *“Potential of zwitterionic based hydrogels in chronic wound therapy”*

K. Ruseva¹, K. Ivanova², E. Vassileva¹, T. Tzanov²

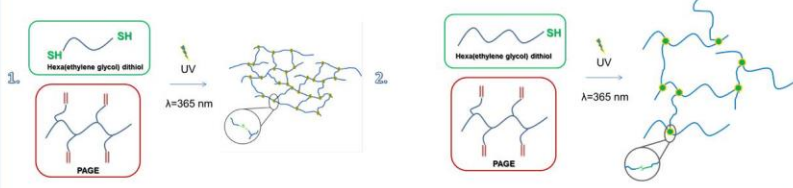
¹Faculty of Chemistry and Pharmacy, Sofia University “St. Kl. Ohridski”

²Department of Chemical Engineering, Universitat Politècnica de Catalunya, Spain

Abstract:

•*In situ* irradiation NMR spectroscopy includes illumination of the samples inside the NMR spectrometer. The setup, which includes LEDs as light sources, provides opportunities to conduct effective photoinitiated experiments in combination with whole variety of NMR methods for studies of photochemical reactions. The possibilities of this novel methodology for thiol-ene modification of (co)polymers accomplished under radical conditions by UV-irradiation without any photoinitiator were tested. For the purpose allyl functional poly(allyl glycidyl ether) (PAGE) homopolymer was reacted with few mono- and dithiol oligo- or poly(ethylene glycols) according to the chosen methodology. Progress of the process was followed by proton nuclear magnetic resonance spectroscopy, and final products separated, purified and characterized by GPC.

Motivation



Scheme 1. Synthesis of allyl functional poly(allyl glycidyl ether) (PAGE 5) precursor.

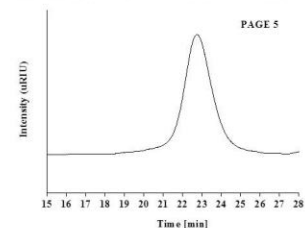


Figure 2. Chromatogram of PAGE5 precursor (RI trace, THF).

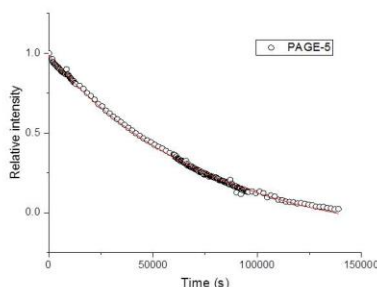


Figure 5. Consumption of C=C of PAGE5 in the course of UV irradiation by LED source at 365 nm with rate constant of $(1.30 \pm 0.05) \times 10^{-5} \text{ s}^{-1}$.

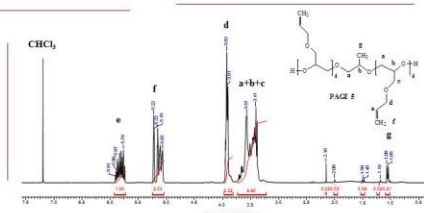


Figure 1. ¹H NMR spectra of PAGE5 precursor in CDCl₃ (600 MHz).

Table 1. Characterization data of the PAGE5 precursor.

Code	Composition	M _n ^{GPC} [g·mol ⁻¹]	M _w /M _n ^b	M _n ^{1H NMR} [g·mol ⁻¹]
PAGE 5	Poly(AGE) ₈	1300	1.1	1000

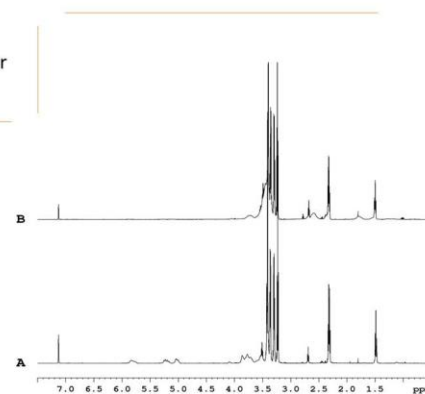


Figure 6. (A) ¹H NMR spectrum of mixture of PAGE and hexa(ethylene glycol) dithiol before (A) and after (B) irradiation at 365 nm for 40 h taken in C₆D₆. (600 MHz)

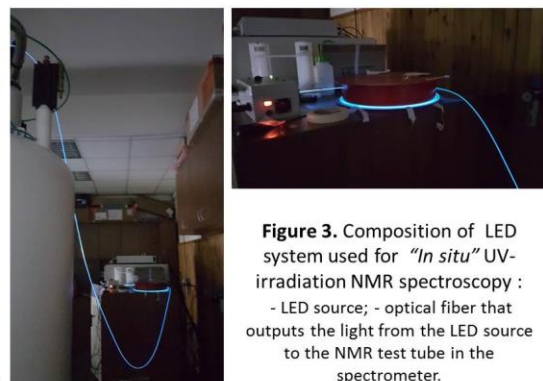
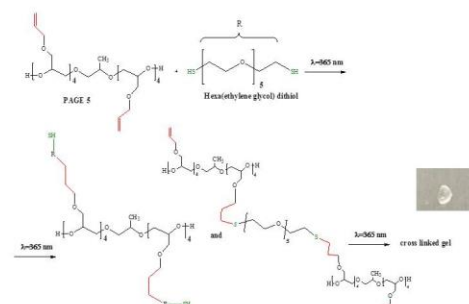


Figure 3. Composition of LED system used for "In situ" UV-irradiation NMR spectroscopy :
- LED source ; - optical fiber that outputs the light from the LED source to the NMR test tube in the spectrometer.



Scheme 2. Schematic illustration of thiol-ene "click" coupling reaction under UV illumination with LED source fixed at 365 nm.

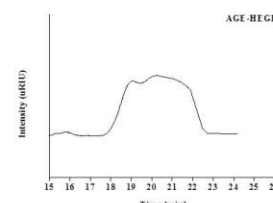
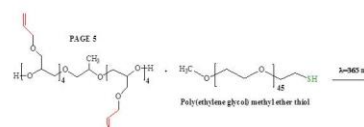


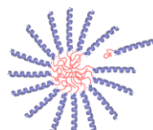
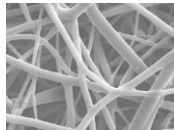
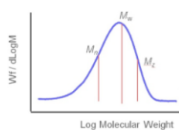
Figure 7. Chromatogram of purified PAGE5-HEGDT soluble fraction (RI trace, THF).

Experiment in progress:



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Conclusion: Versatile LED-irradiated NMR spectroscopy was successfully implemented for *in situ* study of photoinitiated coupling reaction of poly(allyl glycidyl ether) and few oligo/poly(ethylene glycol) (di)thiols. The preformed functionalized (co)polymer were prepared via anionic ROP while the thiol-ene modifications were done via LEDs UV illumination of mixture of solution of reagents. ¹H NMR spectra and GPC traces of resulting products support the expected turnaround of click reaction and formation of pegylated (co)polymers. Upon coupling with dithiol reagent, formation of a gel-fraction in a noticeable amount was observed, which is subject of a further study.



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София, 2019 г.

