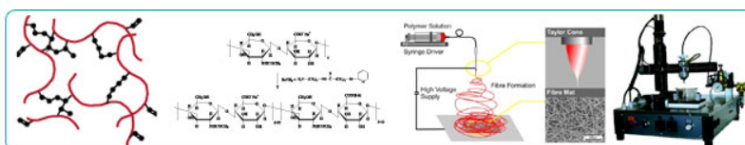
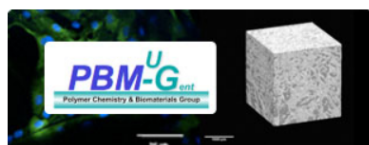


@ UGENT & VUB

Prof. Sandra Van Vlierberghe, PhD



Research activities

- Functional polymers for biomedical applications
- Biomaterials: e.g. biocompatible coatings
- Advanced drug/gene delivery systems
- Scaffolds for tissue engineering
- Biosensors and polymers for optical applications

PBM staff



<http://www.pbm.ugent.be/>



<http://www.b-phot.org/>



DOCTOR BENJAMIN FEIGEL GRADUATED WITH HIGHEST HONORS PRESENTING THE POTENTIAL OF DIAMOND AND GRAPHENE FOR INTEGRATED NONLINEAR OPTICAL DEVICES

Published on 02 July 2018



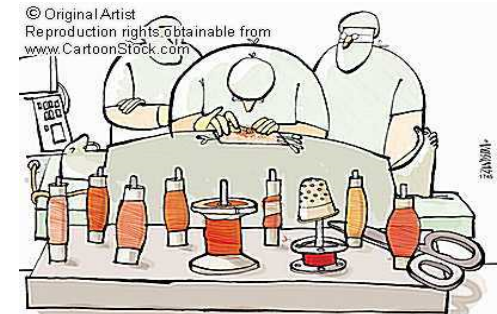
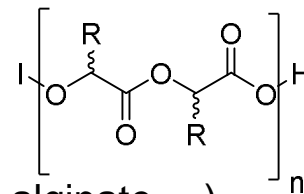
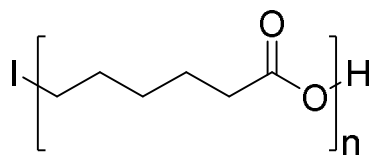
A long title worthwhile as Benjamin has successfully shown the important opportunities carbon-based materials offer for integrated nonlinear optics during his PhD research. As in electronics, also in photonics the aim is to develop very

B-PHOT cooperates with EYESTVZW for STEM-projects in Photonics

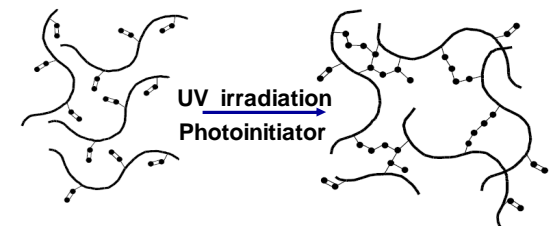
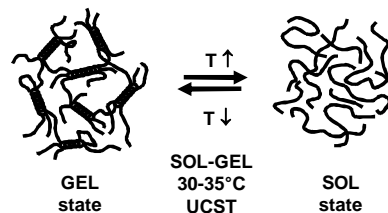


CURRENT MATERIAL RANGE @ PBM

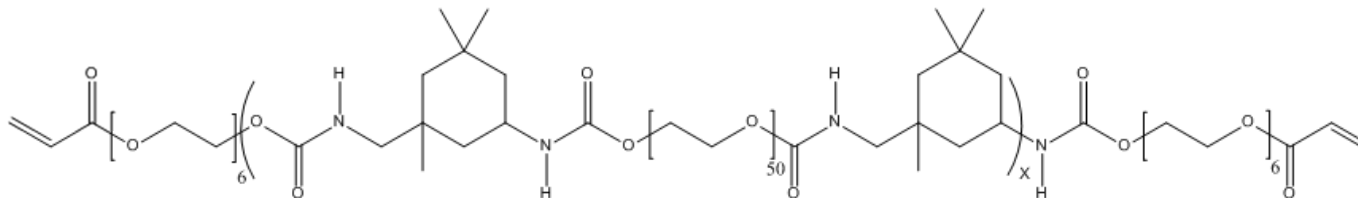
- Biodegradable polyesters
 - Commercial FDA approved: (PLA, PCL, ...)
 - In House synthesis: (PDLLA, PLAMA, PMA,...)



- Photocrosslinkable Hydrogels (modified gelatin, alginate,...)



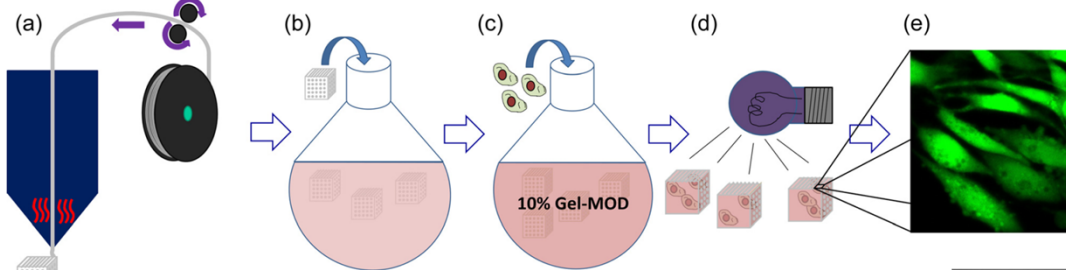
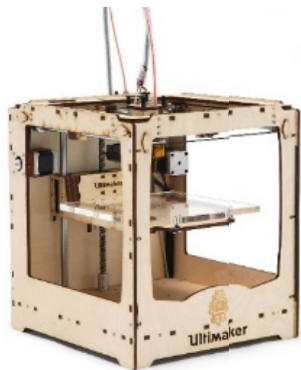
- Acrylate end-capped photocrosslinkable macromonomers (patented toolbox)



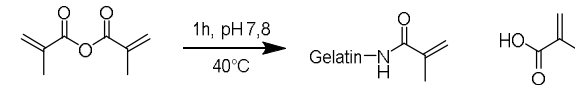
ADDITIVE MANUFACTURING @ PBM

- Applications:
 - Polyester-gelatin combination scaffolds
 - Encapsulated MC3T3 cell line
 - Gel-MOD as carrier

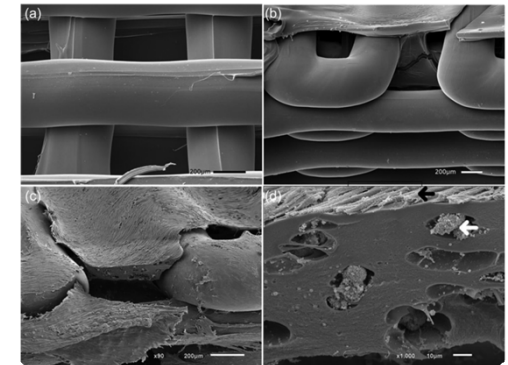
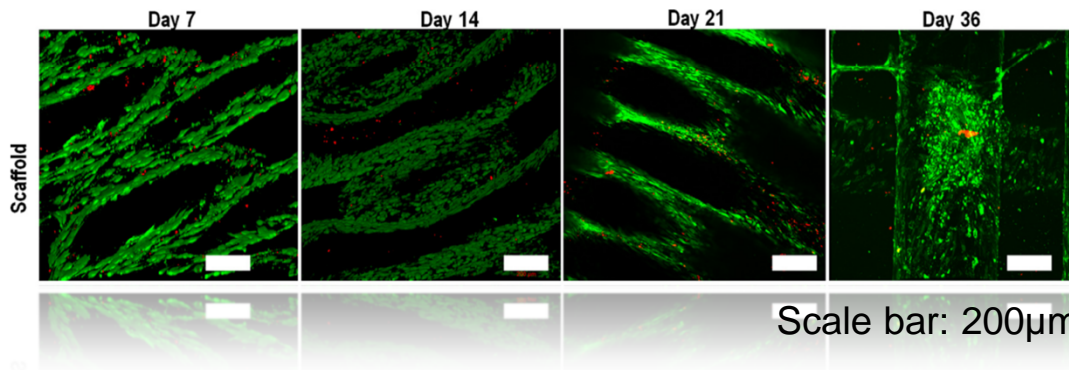
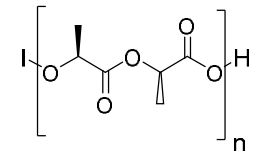
Ultimaker 1



Gel-MOD



PLLA



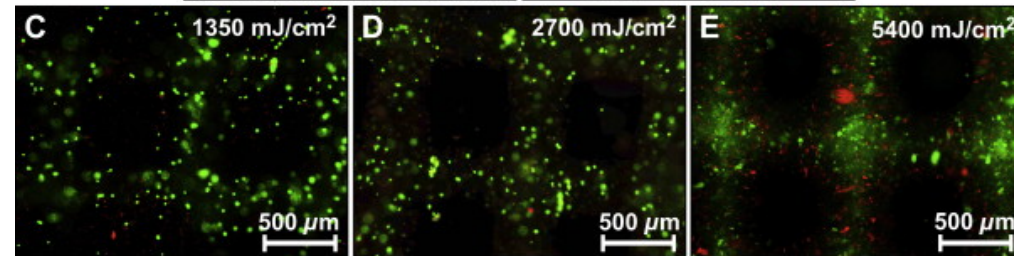
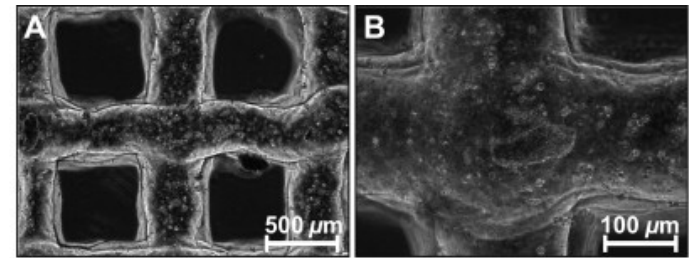
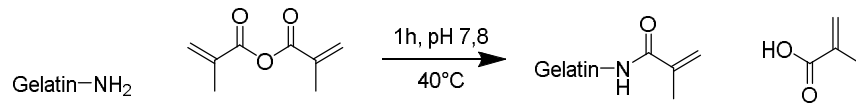
ADDITIVE MANUFACTURING @ PBM

- Applications:
 - Polyester scaffolds
 - Polyester-gelatin combination scaffolds
 - Direct plotting of synthesized materials (AUP)
 - Hydrogel solution printing (AUP)
 - **Cell encapsulation**

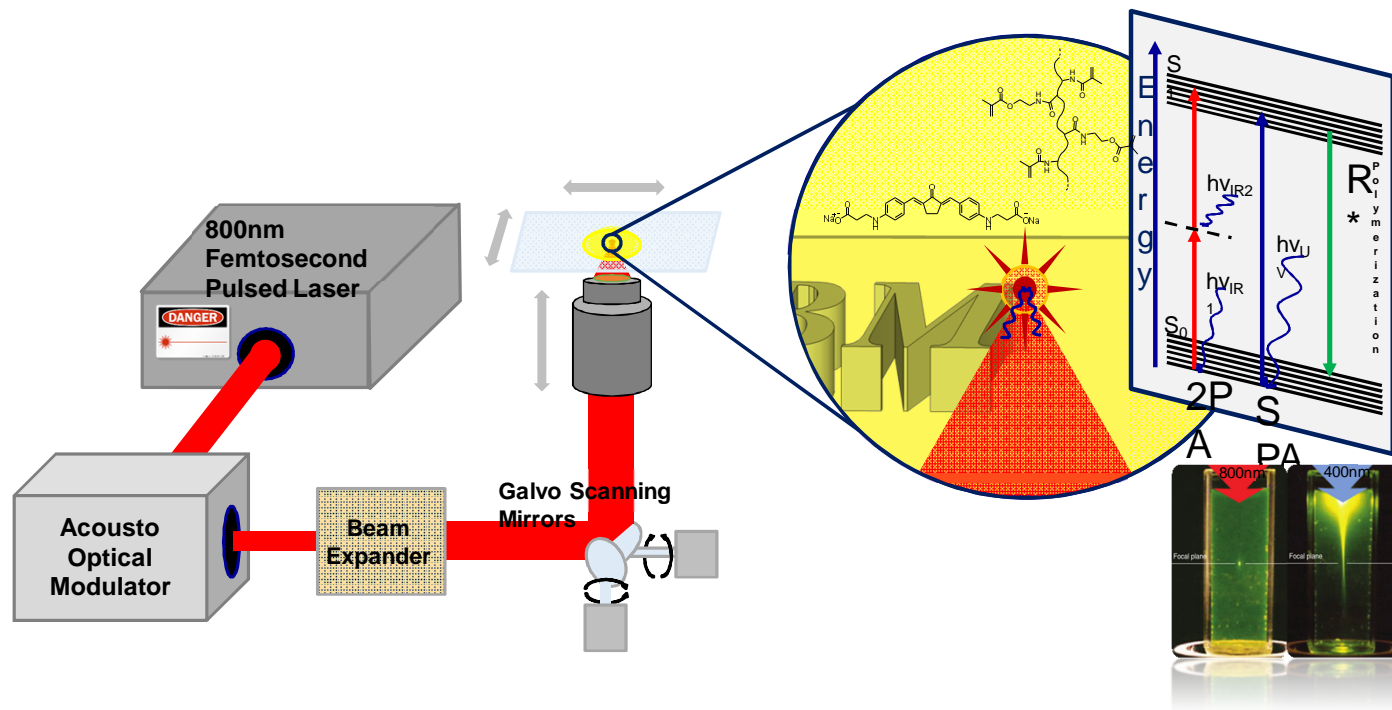
Bioplotter



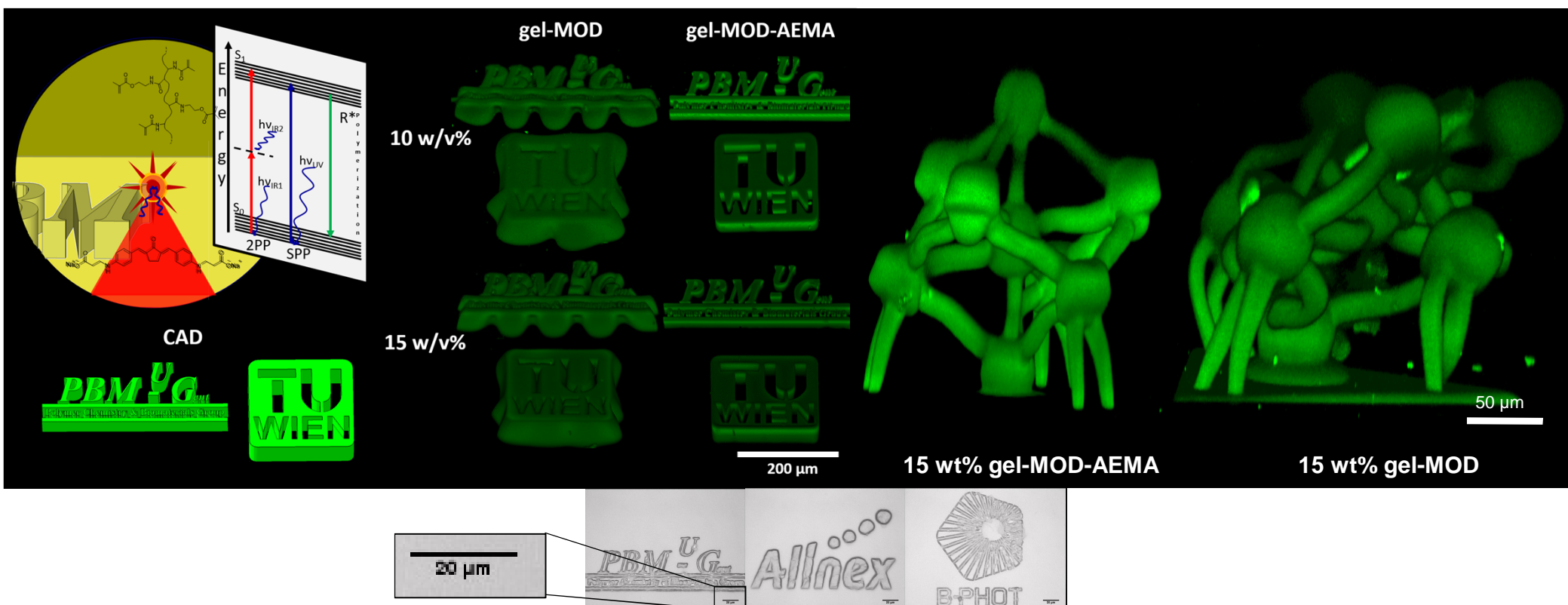
Gel-MOD



ADDITIVE MANUFACTURING @ PBM - BPHOT



ADDITIVE MANUFACTURING @ PBM - BPHOT

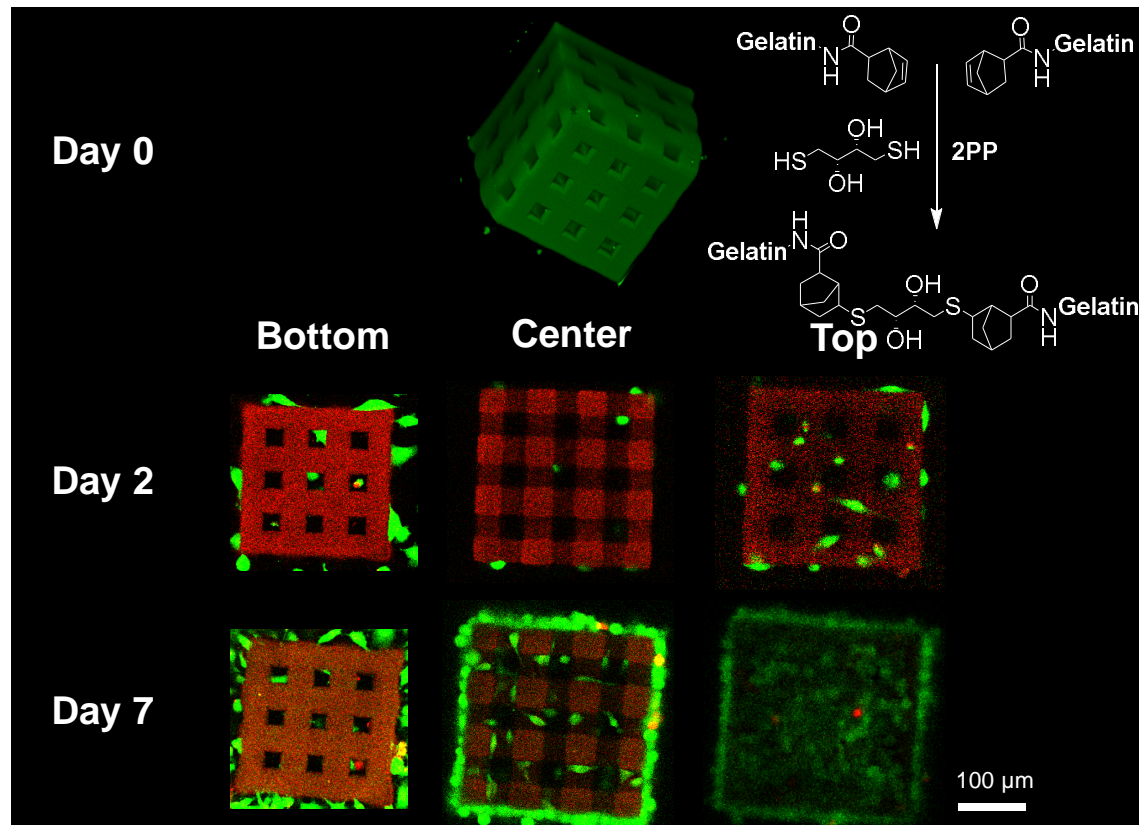


Collaboration with Prof. A. Ovsianikov, TUWien, Austria

Houben, A., Van Hoorick, J. *et al.* Flexible oligomer spacers as the key to solid-state photopolymerization of hydrogel precursors. *Mater. Today Chem.* **4**, 84–89 (2017).

Van Hoorick, J. *et al.* Crosslinkable gelatins with superior mechanical properties enabling efficient two photon polymerization (in preparation)

ADDITIVE MANUFACTURING @ PBM - BPHOT



CONCLUSIONS @ PBM

- Tailorable patented materials toolbox at hand
 - Unique reactivity
 - Solid state crosslinkable
 - Tailorable to different materials
- Extensive hydrogel expertise
 - Gelatin derivative range
 - Proper biomedical capabilities
- Different AM opportunities at hand

