Manos Anyfantakis CV

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I am a passionate materials scientist and physical chemist focusing on soft matter. Employing self-motivation as a driving force and being sheerly perseverant, I seek continuous development. My wide-ranging career in both **academia and industry** resulted in my **research diversity**, comprising a blend of technical skills, experience, and vision for the future. Being open-minded, I **chose to explore numerous** topics while living and working in five diverse countries and collaborating with teams around the globe. This, combined with my determination for scientific rigor, has led to a **broad spectrum of interests**, while maintaining the **desired level of depth**. Being fan of simplicity, I devise creative concepts to address the challenges of multidisciplinary research. This **"bottom-up'' thinking** is powerful also for **teaching** and **communicating science**; I have developed unconventional tools for conveying concepts to young scientists that have proved to be both effective and rewarding, as evidenced by their own assessment.

My curiosity-driven research agenda focuses on **understanding soft matter (self-)organization** both in the bulk and at various interfaces. Beyond curiosity, I aim to develop **solutions for technological and societal challenges**. In this direction, I build on acquired knowledge and devise innovative strategies that cross the boundaries between physics, chemistry, and materials science, to engineer materials with tailored properties. My vision is to create an "**inventory" of eco-friendly building blocks** that, combined with a **toolbox of simple yet robust strategies**, would lead to **sustainable materials** for **coatings, encapsulation, photonics, sensing,** and **biotechnology** applications. My brief yet enlightening **tenure in the industry** at the intersection between materials processing, robotics, and space research provided me with invaluable elements that strengthened and further enriched my research philosophy and practice. These include both **practical experiences**, such as the creation (from scratch) and complete management of several labs, technical procurement and **professional experiences**, such as performing under tight and strict deadlines, considering cost and efficiency, and effectively communicating with individuals of diverse technical and non-technical backgrounds and cultures.

Education

JANUARY 2010

Ph. D., Chemistry

Dept. of Chemistry, University of Crete (UoC), Greece

Max Planck Institute for Polymer Research (MPIP) Mainz, Germany

- **ΠΕΝΕΔ 2003 scholarship, Program for Research Staff Reinforcement**, GSRT, Greece
- **Ph. D. Fellowship, International Max Planck Research School for Polymer Materials**

NOVEMBER 2007

M. Sc., Applied Molecular Spectroscopy

Dept. of Chemistry, UoC, Greece

NOVEMBER 2005

B. Sc., Materials Science & Technology

Dept. of Materials Science, UoC, Greece

- Ranked 2nd out of a total of 60 students

Research Experience

FEBRUARY 2024 – PRESENT

External Collaborator

Jožef Stefan Institute, Slovenia

- **Projects:** Biodegradable thin polycyanoacrylate films for the controlled release of drugs. Cellulose-based photonic elements. Liquid crystal elastomers for light manipulation. Water-based interference films.

APRIL 2023 – FEBRUARY 2024

Materials Engineer & Lab Coordinator

OffWorld Europe, Luxembourg

- **R&D activities:** Water adsorption/desorption kinetics of sorbent materials (electrolytes, gels, zeolites). Water purification, treatment & characterization. Lunar icy regolith simulant development. Space-grade materials selection for payloads on robotic platforms. Co-authoring technical notes & participation in review meetings with the European Space Agency.
- **Lab setup activities:** Design & setup of Materials Processing lab, Electrical & Electronic Integration lab & Mechanical Workshop.
- **Equipment Coordinator:** Technical communications, selection, procurement, setup, maintenance.
- **Environmental, Health, & Safety Officer:** Protocol development, compliance with regulations, selection of safety equipment and items.

JUNE 2019 – MARCH 2023

Research Scientist, Principal Investigator

Dept. of Physics & Materials Science, Univ. of Luxembourg (UL), Luxembourg

- Funded by a **CORE Junior grant** from the **Luxembourg National Research Fund (FNR)**. Project: ''COReLIGHT'' (Colloidal Organization at interfaces Reconfigured by LIGHT-driven thermal Marangoni flows). **Total FNR contribution: €456,000**
- Other projects: Liquid crystalline organization of cellulose-based polymers & colloids for responsive photonic materials. Green synthesis of biodegradable thin films *via* interfacial cyanoacrylate polymerization. Functional liquid & solid 2D materials by the self-assembly of plasmonic nanoparticles. *Mentor: J. Lagerwall; External mentor: J. Dhont (Forschungszentrum Jülich)*

JULY 2017 – MAY 2019

Postdoctoral Research Associate

Physics & Materials Science Research Unit, UL, Luxembourg

- Project: Photonic films by drying suspensions of cellulose nanocrystals. *Advisor: J. Lagerwall*

MARCH 2013 – MARCH 2017

Marie Curie Fellow, Postdoctoral Research Associate

Dept. of Chemistry, École Normale Supérieure Paris (ENS), France

- Funded by a **Marie Curie Intra-European Fellowship for Career Development** from the **European Commission** (April 2014 – April 2016). MC-IEF project: ''DIOPTRA'' (Digital Optofluidics for the Remote Actuation of Liquids). **Total EC contribution: €194,000**
- Other projects: Light-driven microfluidics. Nanoparticle deposition from evaporating colloidal suspension drops for patterning & diagnostic applications. Spontaneous & external field-directed self-assembly of particles at various interfaces. *Advisor: D. Baigl*

MARCH 2011 – FEBRUARY 2013

Postdoctoral Research Associate

Physics at Interfaces, Max Planck Institute for Polymer Research (MPIP) Mainz, Germany

- Project: Dynamic wetting of surfactant solutions. *Advisors: G. Auernhammer, H.-J. Butt*

JANUARY 2010 – APRIL 2010

Postdoctoral Research Associate

Group of Physics at Interfaces, MPIP Mainz, Germany

- Project: Interactions of laser light with diblock copolymer solutions. *Advisors: G. Fytas, H.-J. Butt*

FEBRUARY 2009 – JANUARY 2010

Visiting Scientist (Ph. D. candidate)

Group of Physics at Interfaces, MPIP Mainz, Germany

- Project: Laser-driven polymer manipulation in transparent solutions. *Supervisor: H.-J. Butt*

NOVEMBER 2007 – JANUARY 2009

Ph. D. candidate

Institute of Electronic Structure and Lasers (IESL), Foundation for Research & Technology Hellas (FORTH) & Dept. Of Chemistry, Univ. of Crete (UoC), Greece

- Thesis: Writing mesoscopic structures in polymer solutions using laser beams: conditions and mechanism of the phenomenon. *Supervisors: B. Loppinet, G. Fytas*

NOVEMBER 2005 – NOVEMBER 2007

M. Sc. student

IESL, FORTH, & Dept. of Chemistry, UoC, Greece

- Thesis: Study of the thermodynamics and phase behavior of suspensions of lamellar organosilica nanoparticles. *Supervisors: G. Fytas, D. Vlassopoulos*

JUNE 2004 – OCTOBER 2004

Undergraduate Research Intern

IESL, FORTH, Greece & Dept. of Materials Science & Technology, Uoc, Greece

- Project: Characterization of anisotropic organosilica nanoparticles by static and dynamic light scattering. *Supervisors: B. Loppinet, G. Fytas*

CAREER BREAK: MAY 2010 – FEBRUARY 2011

Mandatory service in Greek Army/Member of the Office for Construction, Maintenance, Modernization of Technical Equipment. Responsible for purchases & financial administration

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Technical Skills

MATERIALS EXPERTISE

Polymers

- Synthetic (*e.g.*, polydienes)
- Bioderived (*e.g.*, hydroxypropylcellulose)
- Biocompatible and/or biodegradable synthetic polymers (*e.g.*, polycyanoacrylates)

Colloids & Granular Matter

- Synthetic micro- and nanoparticles (polymeric, oxides, metal, carbon black)
- Cellulose-based nanoparticles (*i.e.*, cellulose nanocrystals)

- Lunar regolith simulants (*e.g.*, anorthosite-based plus basalt)

Cellulose-based Lyotropic Liquid Crystals

Surfactants

Sorbents
- Zeolites (*e.g.*, 13X)
- Gels (*e.g.*, SiO2 gel)
- Electrolytes (*e.g.*, CaCl2)

EXPERIMENTAL EXPERTISE

Spectroscopy
- Light scattering (static & dynamic)
- UV/Vis spectroscopy
- Raman spectroscopy
- FTIR spectroscopy

Microscopy
- Optical: Brightfield, Darkfield, Polarized optical microscopy, Confocal, Fluorescence
- Electron: Scanning Electron Microscopy
- Atomic Force Microscopy

Polymer Characterization
- Thermal: DSC, TGA
- Molecular weight determination: GPC/SEC, static light scattering
- Mechanical: rheology

Surface characterization
- Wetting: contact angle goniometry
- Interfacial tension: pendant drop tensiometry
- Topography: mechanical (stylus) & optical profilometry

Fiber Production
- Laser-driven writing of microfibers in polymer solutions
- Co-axial electrospinning of core (liquid crystal)-sheath (polymer) fibers
- Wet spinning of functional core (cholesteric liquid crystal)-sheath (polymer) fibers

Instrumentation
- Development of custom-made light (laser, LED) irradiation setups (*e.g.*, for structured light)
- Development of custom-made imaging setups (e.g., for flow visualization)
- Development of custom-made setups for water desorption from sorbents and condensation
- Development of custom-made setups for water purification

LAB SETUP, MAINTENACE, & MANAGEMENT EXPERIENCE (BOTH IN ACADEMIA & INDUSTRY)

Lab Design & Setup
- Materials Processing Lab creation at OffWorld Europe; lab design (from scratch), execution of works & installation; equipment selection, purchase, & installation
- Mechanical Workshop creation at OffWorld Europe; lab design (from scratch), supervision of works & installation; equipment selection, purchase, & installation
- Electrical & Electronic Integration Lab setup at OffWorld Europe; lab design, equipment selection, purchase, & installation (in collaboration with more specialized colleagues)

- Optics Lab (laser & microscopy) creation at the Univ. of Luxembourg; lab design & supervision of works & installations; equipment purchase & installation

Lab Management

- Equipment maintenance & troubleshooting
- Development, implementation, and updating of Standard Operating Protocols
- Delivery of technical trainings to current and new personnel
- Creation & maintenance of equipment, materials, & consumables inventory (Quartzy software)
- Roles held: Equipment Coordinator, Univ. of Luxembourg; Lab Coordinator, OffWorld Europe

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Other Skills

PROPOSALS, GRANTS, & FUNDING

Proposal Development

- Continuous & intense research on funding agencies & identification of suitable schemes
- More than 14 years of experience with proposal writing, both as PI and co-author, at national (*e.g.*, GSRT, Humboldt, FNR) & international level (*e.g.*, EC-Marie Skłodowska-Curie, ERC-StG & CoG, Horizons)

Funding Acquisition

- Won (PI) CORE Jr fellowship, FNR, project COReLIGHT (2018), **€456,000**
- Won (PI) Marie Skłodowska-Curie IF, EC, project DIOPTRA (2014), **€194,000**
- Co-wrote winning "Heraclitus" proposal, GSRT (2010)

Grant Management

- LuxIMPULSE grant, Luxembourg Space Agency & European Space Agency (collaborator), Lunar In-Situ Resources Utilization project (2023-2024)
- FNR CORE Jr grant (PI), project COReLIGHT (2019-2022)
- FNR CORE grant (collaborator), project SSh (2018-2019)
- Marie Skłodowska-Curie IF (PI), project DIOPTRA (2014-2016)

PROCUREMENT

Technical Procurement

- Technical & Market research various general (e.g., fume hoods) & specialized (e.g., lasers, microscopes) lab equipment
- Offer negotiation with vendors & procurement

ENVIRONMENT & SUSTAINABILITY

Environmental, Health, & Safety

- Research on & implementation of safety procedures in various labs (optics, wet chemistry, materials processing, mechanical workshop) ensuring adherence to national regulations
- Development & delivery of safety trainings (presentations, videos)
- Roles held: Assistant Lab Safety Coordinator, Univ. of Luxembourg; EHS officer, OffWorld Europe

Sustainability Knowledge

- End-Of-Life options for used plastics
- familiar with key concepts: Life Cycle Assessment, Scope 1, 2, 3 emissions, International Sustainability and Carbon Certification, Science-Based Targets

SOFTWARE SKILLS

Origin Lab, ImageJ, MATLAB, Autodesk Fusion 360, Adobe Illustrator, Adobe Premiere Pro, MS Office, SharePoint, GoogleDocs, Overleaf, ChatGPT, OpenArt

LANGUAGE SKILLS

Greek (native), English (full professional efficiency), German, French, Italian (basic)

Track Record

PUBLICATIONS

29 publications in total /27 peer-reviewed papers, 2 conference proceedings papers

- Number of citations: 1387; h-index: 17, i10-index: 19 (source: Google Scholar)
- 20 peer-reviewed publications without my Ph. D. supervisors
- 15 peer-reviewed publications as first author & 12 as corresponding author
- 3 inside journal covers of *Angew. Chem. Int. Ed.*; 2 of them as 'Hot' or 'Very Important' papers
- 2 papers chosen as research highlights in *Nature* and *Nat. Nanotechnol.*, respectively
- 1 paper was chosen as 'Hot Topic' by the journal *Adv. Mater. Interfaces*
- Our recent article on photonic responsive liquid marbles:
  - had an Altmetric score of 70 (top 5% of all research outputs scored by Altmetric)
  - was covered by 9 news stories from 9 science outlets
  - was covered in an article for a broad audience, published online by Photonics Media
- Our recent, invited Feature Article in *Langmuir* was chosen as 'ACS Editors' choice'

OTHER RESEARCH DISSEMINATION ACTIVITIES

Participation in 23 International Conferences/10 oral presentations, 13 poster presentations

- 3 invited talks (Durham CSM & SOFI CDT Symposium 'Particles at Interfaces'; 12.2014, UK. 8th Intern. Symposium on Liquid Crystal Photonics; 03.2019, China. Sir Rideal Symposium 2022, 06.2022, UK)
- Our recent publication on photonic responsive liquid marbles was covered by:
  - two press releases, respectively from UL and Wiley
  - my interview in the podcast "All Things Photonics'' organized by Photonics Media

Activities exposing science to the public/3 events with experimental demonstrations

- Asteroid Day 2023, organized by the Asteroid Foundation, Luxembourg, June 2023
- Image 'Color Mosaic', distinction, Science Image Competition 2021 organized by FNR, June 2021
- Experimental conference: 'Reactive drops: light and special effects' Espace des Sciences Pierre-Gilles de Gennes, organized by ESPCI Paris, October 2015
- Nuit des sciences 2014 co-organized by ENS Paris, June 2014
- 10th Science Market Mainz (Mainzer Wissenschaftsallianz) organized by MPIP, June 2011

Invited for delivering 8 talks in academic institutions/invited seminars & colloquia

• Univ. of Crete (host: G. Petekidis) • Univ. of Ljubljana (S. Čopar) • Wageningen University (L. Honaker) • UL (J. Lagerwall) • Institut Pierre-Gilles de Gennes, Paris (A. Yamada) • Institut Charles Sadron, Strasbourg (F. Thalmann) • Forschungszentrum Jülich (E. Stiakakis) • Univ. of Bayreuth (host: W. Köhler)

Teaching & Mentoring Experience

SEPTEMBER 2020 – MAY 2021

Supervision of Ms. X. Ma (M. Sc. student)/UL

FALL SEMESTER 2019

Development & Teaching of the Physical Chemistry of Colloids course (both theory & exercises)/Master in Physics program, UL

FALL SEMESTER 2018

Assistant in the Physical Chemistry of Colloids course/Master in Physics program, UL

APRIL 2018 – JANUARY 2019

Supervision of Mr. L. Fru-Nubea (M. Sc. student)/UL

MAY 2018 – JULY 2018

Supervision of Mr. V. Kopnar (Intern)/Indian Institute of Technology Guwahati (India) & UL

NOVEMBER 2017 – MAY 2018

Supervision of Mr. B. Dupas (M. Sc. student)/École Centrale de Lyon (France) & UL

NOVEMBER 2015 – MARCH 2017

Co-supervision of Mr. J. Vialetto (Ph. D. candidate)/Université Pierre & Marie Curie & ENS

APRIL 2016 – SEPTEMBER 2016

Supervision of Dr. T. Kurimura (Postdoc)/Kyoto University (Japan) & ENS

SEPTEMBER 2015 – MARCH 201&

Supervision of Mr. M. Hayakawa (Ph. D. candidate)/Tokyo Tech. (Japan) & ENS

JANUARY 2015 – MAY 2015

Supervision of Mr. Z. Geng (M. Sc. student, year 2)/Université Pierre & Marie Curie & ENS

OCTOBER 2014 – NOVEMBER 2014

Supervision of Ms. F. Christie (Ph. D. candidate)/University of Cambridge (UK) & ENS

APRIL 2014 – AUGUST 2014

Supervision of Mr. Z. Geng (M. Sc. student, year 1)/Université Pierre & Marie Curie & ENS

FEBRUARY 2013 & NOVEMBER 2013

Supervision of Mr. A. Pamvouxoglou (Ph. D. candidate)/UoC & MPIP

WINTER SEMESTER 2009

Teaching of Physical Chemistry I (laboratory course)/B. Sc. in Chemistry program, UoC

Managerial, Organization & Leadership Experience

NOVEMBER 2023

Space Cafe #12 – Beyond Boundaries: Exploring the Frontiers/co-organization

JUNE 2023

Space Resources Week 2023/co-organization of & company representation at OffWorld's booth

APRIL 2023

Asteroid Day 2023/co-organization of & company representation at OffWorld's booth, explanation of space research in general & OffWorld's R&D in particular to a general audience

JANUARY 2010 – PRESENT

Referee for 16 scientific journals/including *Nature Phys.*, *Phys. Rev. Lett.*, *Appl. Phys. Lett.*, *Adv. Mater.*, *Adv. Funct. Mater.*, *ACS Appl. Mater. Interfaces*, *Langmuir*, *Biomacromolecules*

NOVEMBER – DECEMBER 2018

Selected by the UL's Leadership Academy/training "Leadership & Self-Management, Conflict and Team Management and Project Management for Professional Research"

AUGUST 2018

Presider at a session on the symposium on Functional Materials from Biopolymer Self-Assembly & Self-Organisation/256th ACS National Meeting, Boston, USA

SPRING 2018

Organizing committee member, Functional Materials from Biopolymer Self-Assembly & Self-Organisation (256th ACS National Meeting)/organization & conference program

WINTER 2018

Member of the organizing committee of the 45th German Liquid Crystal Conference (held in Luxembourg)/responsible for finding sponsors & establishing co-operation

Suggested Referees

JAN LAGERWALL

Professor of Physics, University of Luxembourg/Host & Local Mentor within the framework of my most recent FNR CORE Junior grant

http://www.janlagerwall.eu
jan.lagerwall@lcsoftmatter.com
+352 46 66 44 6219

DAMIEN BAIGL

Professor of Chemistry, École Normale Supérieure de Paris, France/Advisor during my postdoc stay and later Marie Curie fellowship in his group

https://www.baigllab.com/
damien.baigl@ens.fr
+33 1 4432 2405

BERNARD BINKS

Professor of Physical Chemistry, University of Hull, UK/Long-time collaborator in several research projects (2D colloid self-assembly, liquid marbles, drop drying)

https://www.hull.ac.uk/staff-directory/bernard-p-binks
B.P.Binks@hull.ac.uk
+44 (0)1482 465450

MIHA RAVNIK

Dean, Faculty of Mathematics and Physics, University of Ljubljana, Slovenia/Most recent collaborator (provides simulation support; project: green synthesis of thin polymer films)

https://ravnik.fmf.uni-lj.si/
miha.ravnik@fmf.uni-lj.si
+386 1 4766 709

MARIA VAMVAKAKI

Professor of Chemistry, University of Crete, Greece/Taught me at UoC; Suggested to me to apply for this position

https://www.materials.uoc.gr/en/faculty/maria-vamvakaki/
vamvakak@materials.uoc.gr
+302810545019

JAN DHONT

Professor of Physics, Heinrich Heine University, & Director of the Institute of Biomacromolecular Systems and Processes, Forschungszentrum Jülich, Germany/External Mentor within the framework of my most recent FNR CORE Junior grant

https://www.fz-juelich.de/SharedDocs/Personen/IBI/IBI-4/EN/Dhont_J.K.G.html?nn=807766
j.k.g.dhont@fz-juelich.de
+49 2461 61 2160

KYLE ACIERNO

Managing Director, OffWorld Europe, Luxembourg/Managing Director during my time at OffWorld Europe

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