IRENE MALEGIANNAKI

Date of birth: 23/06/1995 | **Nationality:** Greek | **Gender** Female |

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Vasileos Konstantinou 9, 47132, Arta, Greece

EDUCATION

2017 – 2020
Master of Science

Depatment of Chemistry, School of Sciences and Engineering, University of Crete, Heraklion (Greece)
Field of Study: **Physical Chemistry**
Grade: **Excellent**

Thesis: "*Experimental conditions and signal extraction optimization in Laser Induced Breakdown Spectroscopy (LIBS) for the elemental analysis of biogeochemical archives and metals*"

Institute of Electronic Structure and Laser - Foundation for Research and Technology Hellas (IESL - FORTH), Heraklion, Crete (Greece)

Scientific advisor - supervisor:
Prof. Demetrios Anglos
Physical Chemistry Division, Department of Chemistry, University of Crete

2013 – 2017
Diploma of Chemistry

Depatment of Chemistry, School of Sciences and Engineering, University of Crete, Heraklion (Greece)
Grade: **Very good** (8.1/10)

Thesis: "*Kinetic study of the competing effect of hydrogen atom abstraction and addition to the double bond for the reaction of chlorine atoms (Cl) with ethylene (CH_2=CH_2), in the gas phase, at very low pressures*"

Laboratory of Photochemistry and Chemical Kinetics, Department of Chemistry, University of Crete (Greece)

Scientific supervisor:
Dr. Vassileios C. Papadimitriou
Laboratory of Photochemistry and Kinetics, Physical Chemistry Division, Department of Chemistry, University of Crete

Scientific advisor:
Prof. Demetrios Anglos
Physical Chemistry Division, Department of Chemistry, University of Crete

LANGUAGES

Mother tongue

Greek

Other languages

English (Certificate of Proficiency in English, University of Michigan)

French (Certificat Pratique de Langue Française, Paris-Sorbonne C1)

COMPUTER AND SOFTWARE SKILLS

Operating Systems

MS Windows (XP, Vists, 7, 8 and 10)
Linux (Fedora, SUSE)

Software Packages

Microsoft office (Word, Excel, Power Point)
Technical graphing design and data anlysis (OriginLab, IgorPro, ChemDraw)

Programming Languages

R Language and R Studio
Fortran
LabVIEW

Literature Search Engines and References Management

Google Scholar, Microsoft Academic, Mendeley, EndNote

RESEARCH AND LABORATORY EXPERIENCE

Laser Induced Breakdown Spectroscopy

(LIBS, micro-LIBS elemental mapping, field-portable LIBS)

Competent at extensive LIBS elemental mapping of elemental ratio of sea-shells as a temperature proxy

Advanced at LIBS technique and plasma spectroscopy setup for application in the qualitative and quantitative analysis of solid materials (sea shells, speleothems, minerals, metal surfaces)

Laser Spectroscopy

Solid (Nd:YAG), liquid (Dye) and gas (Excimer and CO_2)

State lasers ranging from UV to IR employed in a range of applications such as ablation, gas-phase photolysis, detection (Laser Induce Fluoroscence) and resonant multiphoton ionization and detection (REMPI and REMD)

Absolute and Relative Rate Methods for the determination of fast reaction rate coefficients

Techniques: i. Very-Low Pressure Reactor (~2 mTorr) coupled with Quadrupole Mass Spectrometry (absolute rate method) and ii. Thermostated Photochemical Reactor coupled with FTIR spectroscopy (relative rate method)

Vacuum Technology and High Pressure and Special Gases (e.g., Toxic, inflammable) Handling

Analytical Techniques (Advanced User)

Laser Induced Breakdown Spectroscopy
Qudrupole Mass Spectrometry
FT-IR Spectroscopy

Analytical techniques (User)

(Raman Spectroscopy, Laser-Induced Fluorescence Spectroscopy, ICP-MS, GC-MS, Atomic Absorption Spectroscopy, UV-Vis Spectroscopy, Gas Liquid Chromatography)

Instruments and Devices Automation and Experimental Data Digitization for Fast Acquisition and Statistics

R, Fortran, LabView

RESEARCH INTERESTS

Instrument development and automation applied in paleoclimatic studies and environmental processes

Analytical plasma spectroscopy

Applications on enviromental processes, new designed materials, physicochemical properties of nanoparticles

Development of spectral data analysis (high resolution 2D-elemental imaging)

For use on environmental processes, component analysis and physical chemistry applications

Laser analytical techniques and instrumentation for Cultural Heritage

TEACHING EXPERIENCE

2018 – 2019
Physical Chemistry undergraduate Laboratory: Teaching Assistant in Spectroscopy and Kinetics experiments

Department of Chemistry, University of Crete
Heraklion, Greece

2019 – 2020
"Laser Induced Breakdown Spectroscopy (LIBS)" Section Laboratory Instructor as part of the course "LASER and Modern Optics"

Department of Physics, University of Crete
Heraklion, Greece

2019
Lab Session Workshop Instructor on LIBS for "Analysis of Archaeological Objects and Works of Art by LIBS" as part of OPTO-CH 2019 summer school

Intitute of Electronic Structure and Laser - Foundation for Research and Technology Hellas (IESL - FORTH)
Heraklion, Greece

PUBLICATIONS

1. Book Chapter: "Open-air Laser-Induced Breakdown Spectroscopy (LIBS)"

2021
I. Malegiannaki, D. Anglos, “Open-air Laser-induced Breakdown Spectroscopy (LIBS)”, Analytical Strategies for Cultural Heritage Materials and their Degradation, edited by J.M.Madariaga, *Royal Society of Chemistry*, **2021**, 1, 45-74 (**https://doi.org/10.1039/9781788015974-00045**)

2. "Temperature and pressure dependence of Cl association reactions ranging from the simplest alkene, CH2=CH2 to biomass products"

Maria E. Aggelaki, Georgia Antonopoulou, Irene Malegiannaki, Emmanuel N. Romanias, James B. Burkholder and Vassileios C. Papadimitriou, "Temperature and pressure dependence of Cl association reactions ranging from the simplest alkene, CH_2=CH_2 to biomass products", J. Phys. Chem. A., to be submitted 2021

CONFERENCES AND SEMINARS

2019 – Brno, Czech Republic
Poster Presentation: 10th Euro-Mediterranean Symposium on Laser-Induced Breakdown Spectroscopy, Brno, Czech Republic

"Testing Micro-LIBS mapping of marine mollusk shells for a more reliable use of Mg/Ca as a temperature proxy"

I. Malegiannaki, N. Hausmann, A. Lemonis, P. Siozos, D. Anglos

2017 – Heraklion, Greece
19th Chemistry Postgraduate Conference of the University of Crete (Attended)

2016 – Heraklion, Greece
18th Chemistry Postgraduate Conference of the University of Crete (Attended)

2015 – Heraklion, Greece
13rd Panhellenic of Clinical Chemistry of the Hellenic Clinical Chemistry and Biochemistry Society, Heraklion, Crete (Attended)

VOLUNTEERING

2015
Undergraduate Assistant at Organic Chemistry Undergraduate Laboratory

Department of Chemistry, University of Crete

2019
21st Chemistry Postgraduate Conference of University of Crete

Department of Chemistry, University of Crete

INTERESTS AND SOCIAL ACTIVITIES

Photography, hiking

Flamenco Dancing