

**CURRICULUM VITAE**

**Dr. STYLIANOS I. SFAKIOTAKIS**

Chemical Engineer, MSc, PhD

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**PLACE, YEAR OF BIRTH** Athens-Greece, 1976  
**FAMILY STATUS** Married, two children  
**WORK ADDRESS** Technical University of Crete  
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## **EDUCATION**

### **Doctor of Philosophy (PhD), 2016**

Technical University of Crete, Greece

School of Mineral Resources Engineering

Dissertation: *Study for the valorization of solid agricultural, municipal and industrial wastes of Crete for energy production- Thermal and kinetic analyses*

### **Master of Science (MSc), 2002**

Technical University of Crete, Greece

Department of Environmental Engineering

Dissertation: *Modeling of leachate transport from Amari of Rethymno landfill in the aquifer*

### **Diploma (BSc) in Chemical Engineering, 2000**

National Technical University of Athens, Greece

Department of Chemical Engineering

Dissertation: *Historical and philosophical consideration of views upon science of matter aspects*

## **SCHOLARSHIPS**

Scholarship for the Postgraduate Program “Quality control and Environmental Management”, Department of Environmental Engineering, Technical University of Crete

## **PROFESSIONAL EXPERIENCE**

- Laboratory Teaching Staff, School of Mineral Resources Engineering, Technical University of Crete, *2017-Today*
- Specialized Technical and Laboratory Staff, School of Mineral Resources Engineering, Technical University of Crete, *2014-2017*
- Research and Laboratory Associate at the Solid Fuels Beneficiation and Technology Laboratory with a contract of indefinite duration, Department of Mineral Resources Engineering, Technical University of Crete, *2006 – 2014*
- Research and Laboratory Associate at the PVT and Core Analysis Laboratory, Department of Mineral Resources Engineering, Technical University of Crete, (P.D.407/80 and Project contracts, *2002-2005*)

## **TEACHING EXPERIENCE**

- Postgraduate course: Biomass, Bioenergy and the Environment, (co-teaching with Prof. Vamvuka), *2019-Today*
- Postgraduate course: Environmental Control in Energy Production, (co-teaching with Prof. Vamvuka), *2019-Today*
- Laboratory exercises for the courses: Coal Beneficiation, Technology of Solid Fuels Valorization, School of Mineral Resources Engineering, Technical University of Crete, *2006-Today*
- Laboratory exercises for the courses: Physics 1 (Mechanics, Thermodynamics), Health and Safety in the Mineral Industry (1 exercise entitled “Gas and vapour sampling using the IHVL software”), Department of Mineral Resources Engineering, Technical University of Crete, *2014-Today*
- Laboratory exercises for the courses: Reservoir Engineering, Physicochemical Characterization of Energy Resources, Reservoir Exploitation, Design of Physical Processes, Department of Mineral Resources Engineering, Technical University of Crete, *2002-2005*
- Laboratory exercises for the course: Transport Phenomena, Department of Natural Resources and Environment, Technological Educational Institute of Crete, *2003-2004*
- Support of undergraduate (19) and postgraduate (10) theses, *2006- Today*

## **PARTICIPATION IN PROJECTS**

- Participation (main researcher at one workpackage) in the project “Chemical Composition and Microstructure Analysis of Carbon Dioxide Absorbents”
- Participation in the project “Prototype Unit for Biomass Combustion”
- Participation in the project “Energy from Peaches”
- Participation (main researcher at one workpackage) in the EU project “MOREOIL” (Evaluation of the Miscible Gas Injection in Oil Reservoirs by Monitoring the Asphaltenes Concentration)
- Participation in the project of laboratory evaluation of drilling fluids in the Epsilon 1AS of “Prinos” reservoir (Funding: KAVALA OIL)

## **SPECIAL LABORATORY EXPERIENCE**

- Apparatus and equipment setup for the study of solid fuels pyrolysis, gasification and combustion processes (thermogravimetric analyzer, calorimeter, mass spectrometer, TG/MS coupling, fixed and fluidized bed reactors, biomass boiler, gas analyzers, etc).
- Apparatus and equipment setup for the thermodynamic study of petroleum mixtures under high pressure (PVT system, slim tube, piston and mercury pumps, pressure and temperature transducers, high pressure vessels, etc).

## **ALGORITHMS DEVELOPMENT AND SPECIAL SOFTWARE KNOWLEDGE REGARDING MODELING OF PHYSICOCHEMICAL PROCESSES**

- Development of a mathematical model for biomass pyrolysis and combustion kinetics (Matlab Environment)
- Software knowledge regarding reaction kinetics: NETZSCH Kinetics
- Software knowledge regarding the simulation of a (virtual) laboratory for the evaluation and control of workplace hazards: IHVL
- Development of a mathematical model for the prediction of vapor-liquid-solid (VLS) equilibrium in petroleum mixtures (Matlab Environment)
- Software knowledge regarding VLS equilibrium in petroleum: CMG WinProp
- Software knowledge regarding modeling of chemical transport by 3D groundwater flows: PTC, ArgusOne

## SUMMARY OF CURRENT SCIENTIFIC INTERESTS

- Thermochemical processes (pyrolysis, combustion, gasification) for fossil and non-fossil fuels valorization
- Physicochemical characterization of energy sources and thermal analyses methods (TG/DTG, DTA, TG/MS, etc)
- Kinetic modeling of thermochemical processes
- Ash and biochar characterization and studies

## PUBLICATIONS

### *A/ INTERNATIONAL SCIENTIFIC JOURNALS*

1. Vamvuka D., Loukakou E., Avgoustidis C., Stratakis A., Pavloudakis F., **Sfakiotakis S.**, Co-combustion characteristics of lignite/woody biomass blends. Reactivity and fusibility assessment, *Energy Sources, Part A, 1-15, Published online: 17 Sep 2019*
2. Vamvuka D., **Sfakiotakis S.**, Thermal Behaviour and Reactivity of Swine Sludge and Olive By-Products During Co-pyrolysis and Co-combustion, *Waste and Biomass Valorization 10 (5), 1433-1442, (2019)*
3. Vamvuka D., **Sfakiotakis S.**, Pantelaki O., Evaluation of gaseous and solid products from the pyrolysis of waste biomass blends for energetic and environmental applications, *Fuel 236, 574-582, (2019)*
4. Vamvuka D., **Sfakiotakis S.**, Mpoumpouris A., Slagging and Fouling Propensities of Ashes from Urban and Industrial Wastes, *Recent Innovations in Chemical Engineering, 11, 145-148, (2018)*
5. **Sfakiotakis S.**, Vamvuka D., Study of co-pyrolysis of olive kernel with waste biomass using TGA/DTG/MS, *Thermochimica Acta, 670, 44-54, (2018)*
6. Vamvuka D., Dermitzakis S., Pentari D., **Sfakiotakis S.**, Valorization of Meat and Bone Meal through Pyrolysis for Soil Amendment or Lead Adsorption from Wastewaters, *Food and Bioproducts Processing, 109, 148-157, (2018)*
7. **Sfakiotakis S.**, Vamvuka D., Thermal Decomposition Behavior, Characterization and Evaluation of Pyrolysis Products of Agricultural Wastes, *Journal of the Energy Institute, 91, 951-961, (2018)*

8. Vamvuka D., **Sfakiotakis S.**, Mpoumpouris A., Slagging and Fouling Propensities of Ashes from Urban and Industrial Wastes, *Recent Innovations in Chemical Engineering*, 11,2, (2018)
9. Vamvuka D., **Sfakiotakis S.**, Thermal Behaviour and Reactivity of Swine Sludge and Olive By-Products during Co-pyrolysis and Co-combustion, *Waste Biomass Valorization* <https://doi.org/10.1007/s12649-017-0118-4>, (2017)
10. Vamvuka D., Papas M., Galetakis M., **Sfakiotakis S.**, Thermal Valorization of an Animal Sludge for Energy Recovery, via Co-combustion with Olive Kernel in a Fluidized Bed Unit. Optimization of Emissions, *Energy Fuels*, 30, (7), 5825–5834, (2016)
11. **Sfakiotakis S.**, Vamvuka D., Development of a modified independent parallel reactions kinetic model and comparison with the distributed activation energy model for the pyrolysis of a wide variety of biomass fuels, *Bioresource Technology* 197, 434-442, (2015)
12. Vamvuka D., **Sfakiotakis S.**, Saxioni S., Evaluation of urban wastes as promising co-fuels for energy production- A TG/MS study, *Fuel*, 147, 17, 170-183, (2015)
13. Vamvuka D., **Sfakiotakis S.**, Pazara E., Panopoulos K., Kinetic modeling of five sustainable energy crops as potential sources of bioenergy, *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 38, 12, 1812-1818, (2016)
14. Manara P., Vamvuka D., **Sfakiotakis S.**, Vanderghem C., Richel A., Zabaniotou A., Mediterranean agri-food processing wastes pyrolysis after pre-treatment and recovery of precursor materials: A TGA-based kinetic modeling study, *Food Research International*, 73, 44–51, (2015)
15. Vamvuka D., **Sfakiotakis S.**, Gasification reactivity and mass spectrometric analysis of gases of energy crop chars under a CO<sub>2</sub> atmosphere, *Energy and Fuels*, 29, 5, 3215-3223, (2015)
16. Vamvuka D., **Sfakiotakis S.**, Panopoulos D., An experimental study on the thermal valorization of municipal and animal wastes, *Int. Journal of Energy & Environment*, 4, 191-198, (2013)
17. Karampinis E., Vamvuka D., **Sfakiotakis S.**, Grammelis P., Itskos G., Kakaras E., Comparative study of combustion properties of five energy crops and Greek lignite, *Energy and Fuels*, 869-878, 26, 2, (2012)
18. Vamvuka D., Karouki E., **Sfakiotakis S.**, Salatino P., Gasification of waste biomass chars by carbon dioxide via thermogravimetry-Effect of catalysts, *Combustion Science and Technology*, 184, 64-77, (2012)

19. Vamvuka D., **Sfakiotakis S.**, Effects of heating rate and water leaching of perennial energy crops on pyrolysis characteristics and kinetics, *Renewable Energy*, 36, 2433-2439, (2011)
20. Damartzis Th., Vamvuka D., **Sfakiotakis S.**, Zabaniotou A., Thermal degradation studies and kinetic modeling of cardoon (*Cynara cardunculus*) pyrolysis using thermogravimetric analysis”, *Bioresource Technology*, 102, 6230-6238, (2011)
21. Vamvuka D., Karouki E., **Sfakiotakis S.**, Gasification of waste biomass chars by carbon dioxide via thermogravimetry, Part I: Effect of mineral matter, *Fuel*, 90 1120–1127, (2011)
22. Vamvuka D., Topouzi V., **Sfakiotakis S.**, Evaluation of production yield and thermal processing of switchgrass as a bioenergy crop for the Mediterranean region, *Fuel Processing Technology*, 91, 988-996, (2010)
23. Vamvuka D., Salpigidou N., Kastanaki E., **Sfakiotakis S.**, Possibility of using paper sludge in co-firing applications, *Fuel*, 88,(4), 637-643, (2009)
24. Vamvuka D., **Sfakiotakis S.**, Kotronakis M., Fluidized bed combustion of residues from oranges' plantations and processing, *Renewable Energy*, 44, 231-237, (2012)
25. Vamvuka D., **Sfakiotakis S.**, Mourouzidis T., Bandelis G., Development of a biomass-fired combustion unit for residential heating, *Combustion Science and Technology*, 183, 764-778, (2011)
26. Vamvuka D., **Sfakiotakis S.**, Combustion behaviour of biomass fuels and their blends with lignite”, *Thermochimica Acta*, 526, 192-199, (2011)

#### ***B/ CONFERENCE PROCEEDINGS WITH REVIEWERS***

27. **Sfakiotakis S.**, Vamvuka D., Kosmadaki M., “Combustion characteristics and thermal *behaviour* of agricultural/urban waste blends as potential feedstocks for energy production”, *Proceedings of the 6th Int. Conference on Hazardous and Industrial Waste Management, Chania - Crete, September ( 2018)*
28. Vamvuka D., **Sfakiotakis S.**, Spyridakis S., Panopoulos K., Skevis G., Thermal behaviour and properties of pyrolysis and combustion products of an industrial swine waste, *Proceedings of the 8th European Combustion Meeting, Dubrovnik, Croatia, April (2017)*

29. Tsekos Chr., Vamvuka D., **Sfakiotakis S.**, Mihailof Chr., Lemonidou A., Panopoulos K., Pentari D., Kinetic Modeling for the Pyrolysis of Biomass Fuels derived from Oil Crops, *Proceedings of the 7th European Combustion Meeting, Budapest, Hungary, April, 1-4. P1-57, (2015)*
30. Vamvuka D., Chatib N.El., **Sfakiotakis S.**, “Measurements of ignition point and combustion characteristics of biomass fuels and their blends with lignite”, *Proceedings of the 5th European Combustion Meeting, 1-6, London, England, 28-30 June, (2011)*
31. Vamvuka D., **Sfakiotakis S.**, Alevizos G., Galetakis M., Evaluating olive tree prunings as a secondary fuel in fluidized bed combustion-Emissions and ash effects, *International Nordic Bioenergy Conference, 227-234, Finland, 5-9 September, (2011)*
32. Vamvuka D., **Sfakiotakis S.**, Ash disposal impacts from co-firing lignite and agricultural prunings in Crete, *Proceedings of the International Symposium on Green Chemistry for Environment and Health, Mykonos, 1-6, 27-29 September, (2010)*
33. Vamvuka D., Topouzi V., **Sfakiotakis S.**, Pentari D., Christou M., Production yield and combustion characteristics of Cardoon grown as a potential feedstock for energy applications in Greece, *Proceedings of the 17th European Biomass Conference and Exhibition, 1269-1272, Hamburg, 29 June - 3 July, (2009)*
34. Kalpakas Th, Vamvuka D., Bandelis G., **Sfakiotakis S.**, Mourouzidis Th., An innovative combustion unit for the energy exploitation of agricultural wastes in Greece”, *Proceedings of the 12th Conference on Environment and Mineral Processing and Exhibition, 225-231, Ostrava, 26-28 June, (2008)*
35. **Sfakiotakis S.**, Pasadakis N., Varotsis N., Hjermsstad H.P., Qualitative and quantitative study of asphaltene precipitation during a gas injection project, *13<sup>th</sup> European Symposium on IOR- EAGE, Budapest, Hungary, 25-27 April, (2005)*
36. **Sfakiotakis S.**, Brouzos C., Varotsis N., An EoS based mathematical model for the prediction of asphaltene precipitation, *5<sup>th</sup> Panhellenic Congress of Chemical Engineering, Tziolas Publications, 1121-1124, Thessaloniki, 26-28 May,(2005)*
37. **Sfakiotakis S.**, Pasadakis N., Varotsis N., Study of asphaltene thermodynamic behavior in reservoirs under high pressure, *4<sup>th</sup> Panhellenic Congress of Chemical Engineering, Tziolas Publications, 517-520, Patras, 29-31 May, (2003)*



### ***C/ CITATIONS, H-INDEX, i10-INDEX***

**Citations:** 943 (Google Scholar, December 2019)

**H-index:** 12, **i10-index:** 14 (Google Scholar, December 2019)

### ***D/ REVIEWS***

Reviewer for 6 international scientific journals: “Industrial Crops and Products”, “Thermochimica Acta”, “Energy and Fuels”, “Fuel”, “Energy Conversion and Management”, “Journal of Analytical and Applied Pyrolysis”.

### **LANGUAGES**

English: Proficiency Level

### **ADMINISTRATIVE POSITIONS**

Member (alternate) of the Senate of the Technical University of Crete *(2019-Today)*

Member of the administrative board of the Technical University of Crete Laboratory Teaching Staff Association, *(2018-Today)*

Member of the administrative board of the Technical University of Crete Specialized Technical Laboratory Staff Association: Chairman *(2015- 2017)*, Vice Chairman *(2014-2015)*

Member of the General Assembly of the Mineral Resources Engineering Department, *(2015-2017)*

Member of the Technical Chamber of Greece *(2002-Today)*