Curriculum Vitae

Dimitrios N. Spartinos

Born in 1954 in Patras, Greece

Current position

Lecturer (since June 1998) in Department of Chemical Engineering, University of Patras
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University Education

- Department of Chemical Engineering, National Technical University of Athens, Diploma in Chemical Engineering, 1976
  (Grade: 7.13)
- Department of Chemical Engineering, University of Patras,
  PhD in Chemical Engineering, 1993
  Thesis Title: «Experimental study and mathematical modeling of $CaCO_3$/CaO- lignite fixed and moving bed reactors to capture SO_2»
  Thesis Grade: Excellent

Previous positions

1993-1998: Post doctorate Teaching Assistant, Department of Chemical Engineering, University of Patras.

1982-1993: Teaching Assistant, Department of Chemical Engineering, University of Patras.

1979-1982: Director of Quality Control of the industries «A. Couniniotis S.A.» (Patras, Aegio).

Teaching experience

1983-1993: Assistant teaching in the Department of Chemical Engineering in the University of Patras.

1994 until today: Teaching of the following courses of the undergraduate study program of the Department of Chemical Engineering, University of Patras:

1. Mass and Energy Balances
2. Technical Thermodynamics and Balances
3. Chemical Reaction Engineering I

4. Chemical and Biochemical Engineering Laboratory
5. Chemical Engineering Processes Laboratory I
6. Special Topics in Chemical Technology
7. Industrial Chemical Technologies
8. Reactor Analysis and Design

2018-2019: Teaching the course of the graduate study program of the Department of Chemical Engineering, University of Patras

Monographs

1. Kornaros M., Spartinos D., «Notes of Chemical and Biochemical Engineering Laboratory», University of Patras Editions, Greece (2009).
2. Paraskeva C., Spartinos D., «Notes of Chemical Engineering Processes Laboratory I», University of Patras Editions, Greece (2012).
3. Spartinos D., «Notes of Organic Chemical Technology», University of Patras Editions, Greece (2012).

Research interests

Non-catalytic Gas-Solid Reactions for Air Pollution Control

SO_2 Emissions: The use of calcium-based sorbents to reduce SO_2 emissions from coal-fired power plants has attracted worldwide attention during the last 35 years. Lime or limestone are usually used in fluidized bed or pulverized coal combustors. However, in areas where the introduction of the fluidized bed technology appears unlikely in the foreseeable future and where the injection of limestone in the existing pulverized lignite combustors is impossible due to the very low heating value of the lignite used, a dry or wet process could provide the means for reducing SO_2 emissions of pulverized lignite power plants.

We are currently studying the removal of SO_2 from stack gases of pulverized lignite combustors using dry and wet processes in limestone/lime and lignite reactors. The study includes experiments in lab-scale reactors, mathematical modeling, numerical simulation, parametric analysis and optimization at laboratory and industrial conditions.

Impact of sulphates on durability of concrete structures

Concrete is the most common building material of our days. Despite the significant advances made in recent years in concrete technology, the problems of inadequate durability persist in a dramatic increase. The concrete deterioration over time is the result of various mechanical, physical, chemical or biological processes. The chemical processes that cause concrete deterioration can be distinguished in two categories, those affecting the concrete and those affecting the steel reinforcement of the concrete. In the first subclass there is the chemical effect of harmful substances (molecules or ions) on the concrete. A necessary condition for chemical reactions to occur in the concrete is the presence of water. In general the reactions between harmful components, either present in the concrete or mainly transferred by the environment, and the reactants of the concrete take place when one meets the other. However, due to the low rate of transfer of these components into the mass of concrete, these reactions may need several years to demonstrate their damaging results. In practice, the most common chemical effects on concrete are: the effect of acids, the effect of sulphate and the alkali-silica reaction.

The effect of sulphates on concrete is the reaction of sulphate ions mainly with the aluminate phase of cement, which causes internal expansion in the concrete eventually leading to cracking and decomposition. This action usually occurs when the concrete is in contact with a soil rich in sulphates. For practical handling of this deterioration mechanism, specific materials and limits have been proposed for the concrete composition.
The subject of our research effort is the bibliographic research, the formulation and the solution of a mathematical model and the experimental investigation of the concrete deterioration through the action of sulphates.

Research experience

- Participation in the examination committee of two PhD theses (2008, 2018).
- Participation in the examination committee of 2 postgraduate theses, 2012, 2014.
- Co-supervisor with Prof. C. Vayenas of 9 Diploma Theses, 1985-1993.
- Supervisor of 43 Diploma Theses, 1994 until today.
- Project leader of a research program funded by the Public Electricity Company (DEI), 2005-2006.

Conference participation with work

- In Panhellenic Conferences: 11

Publications

- Articles in International Journals: 4
- Articles in Proceedings of Panhellenic Conferences: 11

Citation index

Citations: 86
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Leadership experience

Member of the following committees of the Department of Chemical Engineering of the University of Patras: Study Program, Students' issues and graduates, Educational Laboratories, Seminars, Educational Trips and Student Practice, 1st ChemEngUP Alumni Symposium.

Professional Affiliations

- Technical Chamber of Greece
- Greek Association of Chemical Engineers

Honors

- Second Prize in the Panhellenic Mathematical Competition of the Greek Mathematical Company, 1971
- First prize by the Public Electricity Company (DEI) for the graduation degree from secondary education, 1971

LIST OF PUBLICATIONS
A. ARTICLES IN INTERNATIONAL JOURNALS

A1. D.N. Spartinos, C.G. Vayenas, «Kinetics of Sulphation of Limestone and Precalcined Limestone», Chem.Eng.Process., 30, 97-106 (1991).

A2. L.E. Kallinikos, E.I. Farsari, D.N. Spartinos, N.G. Papagiannakos, « Simulation of the operation of an industrial wet flue gas desulfurization system», Fuel Processing Technology, 91, 1794-1802 (2010).

A3. J. H. Stefas, S.I. Manavi, F. E. Paloukis and D. N. Spartinos, « Mathematical modeling, steady state simulation, parametric analysis and optimization of SO_2 capture in a countercurrent moving bed (CaO and C) reactor », Journal of Chemical Technology and Biotechnology, 93, 2681-2690 (2018).

A4. C.D.Bonzolis, M.K. Petraki, D.N. Spartinos, «Experimental study and parametric analysis of SO_2 capture in a limestone fixed bed reactor», Journal of Chemical Technology and Biotechnology, 94, 3227-3235 (2019).

B. ARTICLES IN PROCEEDINGS OF PANHELLENIC CONFERENCES

B1. F.E. Paloukis, K.P. Kaliarntas, D.N. Spartinos, S.G. Neofitidis, «Mathematical modelling, simulation and parametric analysis in countercurrent flow moving-bed lime and lignite reactor to capture SO2» (in Greek), Proceedings of the 4th Panhellenic Scientific Conference in Chemical Engineering, Patras, Greece, 445-448 (2003).

B2. K.P. Kaliarntas, E.L. Bountalis, F.E. Paloukis, D.N. Spartinos, «Parametric analysis and optimization in countercurrent flow moving-bed lime and lignite reactor to capture SO2» (in Greek), Proceedings of 5th Panhellenic Scientific Conference in Chemical Engineering, Thessaloniki, Greece, 697-700 (2005).

B3. J. Stefas, T. Lekkas, D. Spartinos, «Parametric analysis and optimization in countercurrent flow moving-bed lime and lignite reactor to capture SO2» (in Greek), Proceedings of the 6th Panhellenic Scientific Conference in Chemical Engineering, Athens, Greece, 809-812 (2007).

B4. L. Kallinikos, E. Farsari, D. Spartinos, N. Papagiannakos, «Analysis and improvement of the operation of the flue gas liquid desulfurization unit of an electric power plant" (in Greek), Proceedings of the 6th Panhellenic Scientific Conference in Chemical Engineering, Athens, Greece, 725-728 (2007).

B5. E. T. Vlassi, D.N. Spartinos, «Parametric Analysis and optimization in countercurrent flow moving-bed lime and lignite reactor to capture SO_2» (in Greek), Proceedings of the 7th Panhellenic Scientific Conference in Chemical Engineering, Patras, Greece (2009).

B6. M.K. Petraki, J.X. Efthimiou, D.A. Panagiotopoulou, P.G. Mermigis, D.N. Spartinos, «Experimental study and parametric analysis of limestone fixed bed reactor to capture SO_2», (in Greek), Proceedings of the 8th Panhellenic Scientific Conference in Chemical Engineering, Thessaloniki, Greece (2011).

B7. A.P. Stavrianeas, P. L. Kizas, D.N. Spartinos, «Experimental study and parametric analysis of limestone fixed bed reactor to capture SO_2», (in Greek), Proceedings of the 9th Panhellenic Scientific Conference in Chemical Engineering, Athens, Greece (2013).

B8. X.M. Theodorakopoulos, X.D. Bontzolis, and D.N. Spartinos, «Experimental study and parametric analysis of limestone fixed bed reactor to capture SO_2», (in Greek), Proceedings of the 10th Panhellenic Scientific Conference in Chemical Engineering, Patras, Greece (2015).

B9. S.E.Manavi, D. Spartinos, «Mathematical modeling in a countercurrent of moving bed reactor CaO and C to capture SO_2 and CO_2, (in Greek), Proceedings of the 12th Panhellenic Scientific Conference in Chemical Engineering, Athens, Greece (2019).

B10. I. Gotsis, E.G. Papadakis, D. Spartinos, «Impact of sulphates on the durability of concrete structures - Experimental study», (in Greek), Proceedings of the 12th Panhellenic Scientific Conference in Chemical Engineering, Athens, Greece (2019).

B11. E. Yfanti, E.G. Papadakis, D. Spartinos, «Impact of sulphates on the durability of concrete structures - Theoretical study», (in Greek), Proceedings of the 12th Panhellenic Scientific Conference in Chemical Engineering, Athens, Greece (2019).