

Jacob Z Name: Jacob Zabicky

Citizenship: Israeli

One child (54 years old)

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Department of Chemical Engineering

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Education:

- 1953-1956 School of Chemistry, Universidad Nacional Autónoma de México (UNAM), Graduated cum laude as Chemist (equivalent to M. Sc.).
Advisor: Dr. Owen H. Wheeler.
Thesis: Reactividad y estereoquímica de cetonas derivadas de la ciclohexanona. (Reactivity and stereochemistry of ketones derived from cyclohexanone)
- 1956-1960 Department of Organic Chemistry, Hebrew University of Jerusalem.
Graduated as Ph. D.
Advisor: Prof. Saul Patai.
Thesis: Kinetics and Mechanism of carbonyl-methylene condensation reactions.
- 1982-1983 Department of Chemical Engineering, Ben-Gurion University of the Negev. Graduated as B. Sc. In chemical engineering

Academic Experience:

- 2010- Professor, Department of Advanced Materials, Jerusalem Colloge of Engineering (part time employment)
- 2006-2010 Visiting Scholar, Department of Advanced Materials, Jerusalem Colloge of Engineering.
- 2001 Visiting Scholar, Department of Materials Engineering, Western Michigan University, Kalamazoo, Michigan, USA.
- 2000-2006 Professor, Institutes for Applied Research, Ben-Gurion University of the Negev, Beer-Sheva, Israel.
- 2000 (sabbatical leave) Visiting Professor, Department of Physics, Universitat Autònoma de Barcelona (UAB), Bellaterra (Barcelona), Spain
- 1998 (sabbatical leave) Visiting Professor, Department of Chemical Engineering, Universitat Rovira I Virgili (URV), Tarragona, Spain
- 1989 (sabbatical leave) Visiting Professor, Bergbau Forschung, Essen, Germany.
(sabbatical leave) Visiting Professor, Department of Chemical Engineering, University of the Witwatersrand, Johannesburg, Republic of South Africa.

- 1989-2000 Senior research worker (Class A+), Institutes for Applied Research, Ben-Gurion University of the Negev, Beer-Sheva, Israel.
- 1982-1983 (sabbatical leave) Undergraduate Student, Department of Chemical Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel.
- 1974-2000 Associate Professor, Institutes for Applied Research, Ben-Gurion University of the Negev, Beer-Sheva, Israel.
- 1973-1989 Senior Research Worker (Class A), Institutes for Applied Research, Ben-Gurion University of the Negev, Beer-Sheva, Israel.
- 1968-1973 Senior Research Worker (Class A), Department of Biophysics, Weizmann Institute of Science, Rehovot, Israel
- 1965-1968 Research Worker (Class B), Institute for Fibers and Forest Products Research, Jerusalem, Israel.
- 1963-1965 Honorary Lecturer, Department of Chemistry, Universidad Central de Venezuela, Caracas, Venezuela.
- 1962-1965 Senior Research Worker (Investigador A), Department of Chemistry, Instituto Venezolano de Investigaciones Científicas (IVIC), Caracas, Venezuela
- 1961-1962 Post-Doctoral Fellow, Department of Chemistry, University College, London, UK.
- 1961 Assistant Lecturer, Department of Organic Chemistry, Hebrew University, Jerusalem, Israel.
- 1956-1961 Graduate Assistant, Department of Organic Chemistry, Hebrew University, Jerusalem, Israel.
- 1955 Research Assistant, Institute of Chemistry, Universidad Nacional Autónoma de México (UNAM), México, D.F., Mexico.

Academic activities (all at BGU unless otherwise stated)

Courses thought

1. *General chemistry* - Undergraduate course for engineering students of IDF.
2. *Organic chemistry* - Undergraduate course for chemical engineering students.
3. *The chemist and chemical engineer in the chemical industry* - A graduate course dealing with subjects not usually touched by the academic curriculum of chemists and chemical engineers: Organization of the industrial enterprise, special characteristics of the chemical industry, sources of information, R&D, patent laws, selling and buying know-how, industrial intelligence, quality and quality control in the chemical industry, specifications and standards, etc. (also given in Spain at Universitat Rovira i Virgili, Tarragone, Spain).
4. *Principles of chemical engineering: Material and energy balances* - Undergraduate course for chemical engineering students (will be given in a modified version at the Jerusalem College of Engineering).
5. *Estimation of thermodynamic properties of fluids* - Undergraduate course for chemical engineering.
6. *Properties and applications of coal and oil shales* - Graduate course for chemistry, chemical engineering and mechanical engineering students.
7. *Sampling and data processing* - Undergraduate course for chemistry students dealing with the development of analytical protocols, sampling methods and elementary statistical analysis of the properties of populations and analytical results.
8. *Principles of chemical engineering: Fluid flow and heat transport* – Undergraduate course for environmental engineering students.

9. *Nanomaterials, properties and applications* - Graduate course on synthesis, properties and application of nanoparticulate materials. (Was also given at Universitat Rovira i Virgili, Tarragone, Spain, Universitat Autònoma de Barcelona, Barcelona Spain, Western Michigan University, Kalamazoo, MI, USA and in a modified version at the Jerusalem College of Engineering).

Professional Activities

Administrative activities

- 1998-today Member of the steering committee of the Center for Powder Technology.
- 1995-today Member of the Library Committee, Ben-Gurion University of the Negev, Beer-Sheva, Israel.
- 1984-1988 Head of the analytic and test laboratory of the Rudolf Bloch Center for Coal Research, Ben-Gurion University of the Negev, Beer-Sheva, Israel. During this assignment experience was acquired as for handling of highly hygroscopic materials (dry coal).
- 1984-1998 Member of the steering committee of the Rudolf Bloch Center for Coal Research, Ben-Gurion University of the Negev, Beer-Sheva, Israel.

Professional functions outside universities

- 1963-1965 General Secretary of the Caribbean Chemical Conference.

Professional consulting

- 1995 Chemical engineering consultant for the design of an advanced plant for disposal of dangerous materials, Environmental Services, Ltd., Ramat-Hovav, Israel.
- 1987 Scientific consultant for the analytical services of PAMA (Energy Resources Development Ltd.), Mishor-Rotem, Israel.
- 1972-1974 Consultant to the Senior Scientist of the Ministry of Development, Government of Israel.

Membership in professional societies

- Many years Israel Chemical Society.
- Many years Israel Institute of Chemical Engineering.

Grants and Awards

Research grants

- 1983-1988 Pama (Energy Resources Development Ltd) and Ministry of Energy and Infrastructure. Principal Investigators: Zabicky, J., and Wohlfarth, A., Degree of combustion of oil shales, ~\$100,000.
- 1986-1987 R. Bloch Center for Coal Research, BGUN. Principal Investigators: Balkany, A., and Zabicky, J., Production of low ash coal by the agglomeration method, M., , ~\$8,000.
- 1986-1987 R. Bloch Center for Coal Research, BGUN. Principal Investigators: Zabicky, J., and Zevin, L., Thermal behavior of mineral matter in coal in oxidizing and reducing conditions, ~\$5,000.
- 1987-1988 Pama (Energy Resources Development Ltd). Principal Investigators: Zabicky, J., and Leichter, S., Streamlining of the analytical laboratory of Pama, ~\$25,000.

- 1987-1988 National Coal Supply Corporation Ltd and Council for Scientific and Industrial Research of South Africa. Principal Investigators: Zabicky, J., Tamir, A., Design of a pilot plant for testing pulverized coal in combustion , \$25,000.
- 1990 R. Bloch Center for Coal Research, BGUN. Principal Investigators: Zabicky, J., and Zevin, L., Thermal behavior of mineral matter in coal in oxidizing and reducing conditions, ~\$6,000.
- 1990-1991 Israel Electricity Corporation. Principal Investigators: Zabicky, J., and Balkany, A., Beneficiation of coal ash: Separation of coal particles, ~\$80,000.
- 1990-1992 Joint German-Israeli Research Program/BMFT-NCRD. Principal Investigators: Zevin, L., and Zabicky, J., New sources for ceramic oxides, DM 318,000.
- 1991 National Coal Supply Corporation. Principal Investigator: Zabicky, J., Mineral matter of coal, \$5,000.
- 1992 The Cement Fund. Principal Investigators: Zabicky, J., Forgacs, H., and Zevin, L., Superhydrophobic treatment of coal ash and cements, ~\$35,000.
- 1992-1994 Ministry of Science and Technology. Principal Investigators: Polishchuk, S., Zabicky, J., and Zevin, L., Application of oil shale ash for disposal and immobilization of industrial wastes, ~\$80,000.
- 1992-1993 M. R. Bloch Center for Coal Research, BGUN. Principal Investigator: Zabicky, J., Exploratory research of new coal gasification catalysts, ~\$4,000.
- 1993-1995 Ministry of Industry and Commerce. Principal Investigators: Levin, L., Zabicky, J., and Zevin, L., Metal-infiltrated ceramic composite materials, NIS 160,000.
- 1993 Israel Electric Corporation and M. R. Bloch Center for Coal Research, BGUN. Principal Investigators: Cohen, H., Zabicky, J., Kalman, H., and Hershkovich, M., Coal ash uses and disposal — environmental aspects, ~\$21,500.
- 1993 Dead Sea Works. Principal Investigators: Zabicky, J., and Grinberg, S., Market survey of chlorites, ~\$10,000.
- 1994-1996 , Ministry of Science and the Arts. Principal Investigators: Frage, N., Levin, L., Manor, E., Shneck, R. and Zabicky, J., Structure and properties of infiltrated and layered metal ceramic composites in the systems Ti-Ni-C and Ti-Ni-B~\$30,000.
- 1995-1997 The Cement Fund. Principal Investigators: Zabicky, J. Epshtain, V., Taig, M., and André Balkany, Influence of seasonal and diurnal climatic changes on the hardening of concrete in the Negev, ~\$50,000.
- 1995-1997 Dead Sea Works. Principal Investigators: Zabicky, J., and Grinberg, S., Manufacture of chlorine dioxide precursors, ~\$120,000.
- 1995-1997 Israel Mineral Industries (TAMI), Ltd. Principal Investigators: Zabicky, J. and Levin, L., Magnesium-alumina infiltrated composite materials, \$55,000.
- 1995-1997 Stern-Totser Fund, BGUN. Principal Investigators: Zabicky, J., Frage, N., and Shneck, R., Dielectric properties of nanostructured magnesium titanate, \$21,000

1996-today	International Center for Diffraction Data. Principal Investigators: Kimmel, G. and Zabicky, J., Powder X-ray diffraction patterns of novel materials, ~\$100,000.
1997-1998	Environmental Services, Ltd. Principal Investigator: Zabicky, J., An advanced plant for disposal of dangerous organic chemicals, \$17,550.
1998-2001	Ministry of the Environment. Principal Investigators: Zabicky, J. and Epshtain, V., Recycling of used concrete, ~\$40,000.
1998-2001	Dead Sea Works. Principal Investigators: Zabicky, J., Epshtain, V., and Taig, M., Protection of concrete from corrosion, ~\$50,000.
1999	Mashal Alumina Industries. Principal Investigators: Zabicky, J., and Taig, M., Design of a laboratory fluidized bed reactor, \$12,000.
2003-2004	Makhteshim, Principal Investigators: Zabicky, J., Epshtain, V., and Taig, M., Analysis and testing of modified concrete formulations for improved resistance against corrosion, ~\$20,000.
2008-2010	VATAT, Principal Investigators: Lotem, H., Kimmel, G. and Zabicky, J., Storage phosphor imaging plate to replace X-ray films, ~\$50,000.

Jacob Zabicky - list of publications

List of publications somewhat related to the project

Refereed articles in scientific journals

1. J. Zabicky, G. Kimmel, J. Yaaran and the late L. Zevin, "Thermal anisotropy of tialite (Al_2TiO_5) by powder XRD", *Nanostructured Materials*, **6**, 675-678 (1995).
2. J. Zabicky, D. Zingerman, R. Shneck and E. Manor, "Properties of nanostructured magnesium metatitanate prepared by the sol-gel technique", *Nanostructured Materials*, **7**, 527-533 (1996).
3. J. Zabicky, N. Frage, G. Kimmel, N. Hazan, H. El-Fahel, E. Goncharov, E. Manor and R. Shneck, Metastable magnesium titanate phases synthesized in nanometric systems, *Philosoph. Mag. B*, **76**, 605-614 (1997).
4. J. Zabicky, G. Kimmel, and E. Goncharov, Metastability of tialite synthesized from nanometric precursors, *Mater. Sci. Forum*, **269-272**, 613-616 (1998).
5. G. Kimmel and J. Zabicky, XRPD analysis of stable and metastable magnesium titanate phases, *Mater. Sci. Forum*, **278-281**, 624-629 (1998).
6. G. Kimmel and J. Zabicky, Quantitative X-ray diffractometry and structural analysis of magnesium titanate mixtures using the Rietveld refinement, *Advances in X-ray Analysis*, **42**, (1999).
7. J. Zabicky and H. Realpe, Gas-phase hydrolysis of tetraethyl orthosilicate (TEOS), *J. Metastable Nanocryst. Mater.*, **2-6**, 203-208 (1999); *Mater. Sci. Forum*, **312-314**, 203-208 (1999).
8. J. Zabicky, G. Kimmel, E. Goncharov and N. Hazan, Mechanical processing of nanometric magnesium titanate precursors, *J. Metastable Nanocryst. Mater.*, **2-6**, 191-196 (1999); *Mater. Sci. Forum*, **312-314**, 191-196 (1999).
9. G. Kimmel, D. Dayan and J. Zabicky, X-Ray diffraction characterization of thermally annealed nanometric alumina powder, *Mater. Sci. Forum*, **321-324**, 762-767 (2000).

10. J. Zabicky, G. Kimmel, E. Goncharov and D. Dayan, XRPD analysis of karrooite-like metastable nanocrystalline phases, *Mater. Sci. Forum*, **378-381**, 741-746 (2001).
11. G. Kimmel, D. Dayan, E. Goncharov and J. Zabicky, Metastable phases XRPD Broadening Analysis of Different Stable and Metastable Nanocrystalline Oxides, in Science of Metastable and Nanocrystalline Alloys Structure, Properties and Modeling, Eds. A.R. Dinesen, M. Eldrup, D. Juul Jensen, S. Lideroth, T.B. Pedersen, N.H. Pryds, A. Schroeder Pedersen, J.A. Wert (Proc. of 22nd Risoe Symp.) 2001, pp283-288
12. G. Kimmel and J. Zabicky, Strain and size effects in metastable nanocrystalline solids, *Proceedings of the Size-Strain III, Analysis of microstructure and residual stress by diffraction methods*, Edt. By P. Scardi, M. Leoni, and E.J. Mittemeijer, pp51-52, December 2-5, 2001, Trento, Italy.
13. G. Kimmel, J. W. Richardson, R. Xu, P. Ari-Gur, E. Goncharov and J. Zabicky, Rietveld refinement of XRD and ND analysis of metastable qandilite-like structures, *Adv. X-Ray Anal.*, **47**, 261-266 (2004).
14. G. Kimmel, J. Zabicky, E. Goncharov and P. Ari-Gur, Phase mapping of multi-component oxides derived from sol-gel precursors, *J. Metastable Nanocryst. Mater.*, **20-21**, 576-581 (2004).
15. J. Gal, D. Mogilanski, M. Nippus, J. Zabicky and G. Kimmel, Fast high-resolution characterization of powders using an imaging plate Guinier camera, *Nucl. Inst. Meth. Phys. Res., Sect. A*, **551**, 145-151 (2005).
16. G. Kimmel, J. Zabicky, E. Goncharov, D. Mogilyanski, A. Venkert, Y. Bruckental and Y. Yeshurun, Formation and characterization of nanocrystalline binary oxides of yttrium and rare earths metals, *J. Alloys Comp.*, **423**, 102-106 (2006).
17. G. Kimmel and J. Zabicky, Stability, instability, metastability and grain size in nanocrystalline ceramic oxide systems, *Solid State Phenomena*, **140**, 29-36 (2008).
18. Zabicky, G. Kimmel, E. Goncharov and F. Guirado, Magnesium titanate phases from xerogels by hot stage X-ray powder diffractometry, *Z. Kristallogr. Suppl.*, **30**, 347-352 (2009).
19. G. Kimmel, J. Zabicky, R. Shneck, A. Tsinman, Z. Shalle, J. D. Fidelus, S. Gierlotka, W. Lojkowski, XRPD study of phase transformations accompanied with grain growth in the alumina–zirconia system, *Z. Kristallogr., proc.* **1**, 455-460 (2011)
20. N. U. Navi, R. Z. Shneck, T. Y. Shvareva, G. Kimmel, J. Zabicky, M. H. Mintz and A. Navrotsky, Thermochemistry of $(Ca_xSr_{1-x})TiO_3$, $(Ba_xSr_{1-x})TiO_3$, and $(Ba_xCa_{1-x})TiO_3$ perovskite solid solutions, *J. Am. Ceram. Soc.*, **95**, 1717–1726 (2012).
21. G. Rafailov, Z. Porat, I. Dahan, R. Zach, G. Kimmel, D. Mogilyansky, K. Rechav and J. Zabicky, X-Ray diffraction characterization of new ternary yttrium–rare earth oxides formed by the sol–gel technique, *Adv. X-Ray Anal.-CD-ROM edition*, **55**, 51-59 (2012).
22. N. U. Navi, G. Kimmel, G. Yardeni, J. Zabicky, R. Z. Shneck, M. H. Mintz and A. Navrotsky, Zirconium incorporation into $CaTiO_3$ perovskite prepared from xerogels and implication for the fate of $(Ca,Sr)TiO_3$ nuclear waste ceramics, *J. Am. Ceram. Soc.*, **96**, 2644–2650 (2013).

Patents

1. Zabicky, J., Linder, C., Grinberg, S. and Heldman, E., Nano- and mesosized particles comprising an inorganic core, *PCT Int. Appl.* (2006), WO 2006072943 A2 20060713.

Chapters in multi-authored books

1. E. Harlev, S. Bittner and J. Zabicky, Analytical aspects of metal enolates, in *The Chemistry of Metal Enolates Part 2* (Ed. J. Zabicky), Wiley, Chichester, 2009, pp. 683-738.
2. J. Zabicky, Analytical aspects of metal phenolates, in *The Chemistry of Metal Phenolates Part 2* (Ed. J. Zabicky), Wiley, Chichester, 2014, in the press.

Editorship of multi-authored books

1. J. Zabicky (Ed.), *The Chemistry of Metal Enolates Parts 1 and 2*, Wiley, Chichester, 2009.
2. J. Zabicky (Ed.), *The Chemistry of Metal Phenolates Parts 1 and 2*, Wiley, Chichester, 2014.