

# **RESUME**

**Amnon Katz**

**March 2019**

## **Academic Degrees**

D.Sc. – 1992, Technion–I.I.T., Department of Civil Engineering.

M.Sc. – 1988, Technion–I.I.T., Department of Civil Engineering.

B.Sc. – 1980, Technion–I.I.T., Department of Civil Engineering (*Cum Laude*).

## **Academic Appointments**

### **Technion**

2018 – present: Professor, Technion-I.I.T., Department of Civil and Environmental Engineering

2007–2018: Associate Professor, Technion–I.I.T., Department of Civil and Environmental Engineering

1997–2007: Senior Lecturer, Technion–I.I.T., Department of Civil and Environmental Engineering (tenure: June 2000).

1994–1997: Lecturer, Technion–I.I.T., Department of Civil Engineering.

1988–1992: Adjunct Teacher, Technion–I.I.T., Department of Civil Engineering.

1986–1988: Adjunct Assistant Teacher, Technion–I.I.T., Department of Civil Engineering.

### **Visiting**

8-9/2016: Summer sabbatical, Hong Kong University of Science and Technology.

Feb.–March 2008: Visiting Associate Professor, Department of Civil and Environmental Engineering, University of Wisconsin-Madison

1993–1994: Research Fellow, Department of Civil Engineering, University of Illinois at Urbana-Champaign.

1992–1993: Research Fellow, Advanced Civil Engineering Materials Research Laboratory, Department of Civil Engineering, University of Michigan, Ann Arbor.

### **Academic Positions**

2009–2013: Academic Director, Technion International School of Engineering.

2018 – present: Head, Division of Structural Engineering and Construction Management, Technion.

### **Professional Experience**

1. Consulting to engineering firms on problems related to concrete technology ('Hanson' – concrete manufacturers, 'Ashcrete' – concrete for Ha'Yovel port in Ashdod, Ministry of Defense, Leviathan Engineers, and others) (1995–present)
2. Engineering management in an insulation firm (cold-store, piping, warehouses and tanks) as Chief Engineer, including the areas of day-to-day activities, general policies and long term planning (1983–1986).
3. Structural design of various residential and commercial buildings, including tall buildings in seismic areas, and large shelters (1980–1986).

### **Research Interests**

1. Environmental friendly construction materials:  
Recycling of waste concrete.  
Life Cycle Analysis (LCA) of buildings  
Minimizing the environmental footprint of concrete  
Solidification of low-level nuclear waste
2. Composite materials in construction (mainly durability aspects):  
Fiber Reinforced Polymers (FRP) for concrete reinforcement.  
Fiber reinforced concrete

## **Teaching Experience**

Technion–I.I.T., Faculty of Civil and Environmental Engineering

014505 – Building Materials	UG	1994 – present
014506* – Advanced Technology of Concrete	UG	1994 – present
016514** – Recycling in Construction	G+UG	1998 – present
014008 – Graphical Engineering Information	UG	2010

University of Wisconsin-Madison, Dep. of Civil and Environmental Engineering

CEE 649** – LCA	UG	2008
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\* Redevelopment of an existing course.

\*\* Development of a new course.

## **Public Professional Activities**

### International committees

1. Chair, RILEM Technical Committee TC 263-EEC “Environmental Evaluation of Concrete Structures Toward Sustainable Construction”, 2012–present.
2. Member, ISO TC71/SC 8 – “Environmental Management for Concrete and Concrete Structures”, 2009–present.
3. Chair, Award Committee, 2006 Best Paper, *Journal of Composites for Construction*.
4. Associate Member, American Concrete Institute (ACI) committee 555: “Concrete with Recycled Materials”, 2005–present.
5. Member, RILEM Technical Committee “FRP-Concrete Bond in Structural Strengthening and Rehabilitation”, 2004–2009.
6. Member, RILEM Technical Committee “High Performance Fiber Reinforced Cementitious Composites”, 2004–2009.
7. Member, RILEM TC-URM “Use of recycled materials in construction”, 2001–2005.
8. Member, PROGRES, an EU Thematic Network on New Products from Glassy Combustion Residues, 1999–2002.
9. Member, CIB (International Council for Research and Innovation in Building and Construction) Task Group TG-39 “Deconstruction”, 1999–2005.

10. Associate Member, American Concrete Institute (ACI) committee 440: “Fiber Reinforced Plastic Reinforcement”, 1998–present.
11. Member, RILEM committee TC-LPC: “Long Term Performance Characteristics of Fiber Cement Composites”, 1996–2001.
12. Member, RILEM committee TC-ETC: “Engineering of the Interfacial Zone in Cementitious Composites”, 1995–2000.

#### Duties in International Organizations

1. Israeli national delegate to CEN (European Committee for Standardization) TC 104 Concrete and related products, 2018 – present
2. Council member, IIFC – International Institute for FRP in Construction, 2006–2013.
3. Israeli national delegate, General Council of RILEM – International Union of Laboratories and Experts in Construction Materials, Systems and Structures, 2003–2013.
4. Editorial board of the *Journal of Composites for Construction*, 2001–2008.

### **Selected Publications**

#### **Selected Refereed Papers in Professional Journals**

##### Published

1. **Katz A.**, Li V.C. and Kazmer A., "Bond Properties of Carbon Fiber in Cementitious Matrix", *ASCE Journal of Materials in Civil Engineering*, Vol. 7, No. 2, 1995, pp. 125–128.
2. **Katz A.** and Li V.C., “Inclination Angle Effect of Carbon Fibers in Cementitious Composites”, *ASCE Journal of Engineering Mechanics*, Vol. 121, No. 12, 1995, pp. 1340–1348.
3. **Katz A.**, "Effect of Fiber Modulus of Elasticity on the Long Term Properties of Micro-Fiber Reinforced Cementitious Composites", *Cement and Concrete Composites*, Vol. 18, No. 6, 1996, pp. 389–400.
4. **Katz A.**, “Microscopic Study of Alkali Activated Fly Ash”, *Cement and Concrete Research*, Vol. 28, No. 2, 1998, pp.197–208.
5. **Katz A.** “Effect of Helical Wrapping on the Fatigue Resistance of GFRP”, *Journal of Composites for Construction*, Vol. 2, No. 3, 1998, pp. 121–125.

6. **Katz A.**, \*Berman N. and Bank L.C., “Effect of High Temperature on the Bond Strength of FRP Rebars”, *ASCE Journal of Composites for Construction*, Vol.3, No. 2, 1999, pp. 73–81.
7. **Katz A.**, Brough A.R., Kirkpatrick R.J., Struble L.J. and Young J. F., “Effect of Solution Concentration on the Properties of Cementitious Grout Wasteform for Low Level Nuclear Waste”, *Nuclear Technology*, Vol. 129, No 2, 2000, pp. 236–245.
8. **Katz A.**, “Properties of Concrete Made with Recycled Aggregate from Partially Hydrated Old Concrete”, *Cement and Concrete Research*, Vol. 33, No. 5, 2003, pp. 703–711.
9. **Katz A.** and Kovler K., "Utilization of Industrial By-products for the Production of CLSM", *Waste management*, Vol. 24, No. 5, 2004, pp. 501–512.
10. **Katz A.**, "The Environmental Impact of Steel and FRP Reinforced Pavements", *ASCE Journal of Composites for Construction*, Vol. 8, No. 6, 2004, pp. 481–488.
11. **Katz A.**, "Treatments for the Improvement of Recycled Aggregate", *ASCE Journal of Materials in Civil Engineering*, Vol. 16, No. 6, 2004, pp. 597–603.
12. †Pushkar S., Becker R., and **Katz A.**, "A Methodology for Design of Environmentally Optimal Buildings by Variable Grouping", *Building and Environment*, Vol. 40, No. 8, 2005, pp. 1126–1139.
13. **Katz A.** and Baum H., "Effect of High Levels of Fines Content on Concrete Properties", *ACI Journal of Materials*, Vol. 103, No. 6, 2006, pp. 474–482.
14. \*Bar-Nes G., **Katz A.**, Peled Y. and Zeiri Y., "The Mechanism of Cesium Immobilization in Densified Silica-Fume Blended Cement Pastes", *Cement and Concrete Research*, Vol. 38, No. 5, 2008, pp. 667–674.
15. Wassermann R., **Katz A.** and Bentur A., "Minimum Cement Content Requirements: A Must or a Myth?", *Material and Structures*, Vol. 42 No. 7, 2009, pp. 973–982.
16. \*Bar-Nes G., Peled Y., Arbel-Haddad M., Zeiri Y. and **Katz A.**, "The Effect of High Salt Concentration on the Integrity of Silica-Fume Blended Cementitious Matrices for Waste Immobilization Applications", *Material and Structures*, Vol. 44, No. 1, 2011, pp. 291–297.
17. ‡Kenny A. and **Katz A.**, “Characterization of the Interfacial Transition Zone Around Steel Rebar by Means of the Mean Shift method”, *Materials and*

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\* Student, supervised by A. Katz

† Student, supervised by A. Katz

‡ Student, supervised by A. Katz

*Structures*, Vol. 45, No. 5, 2012, pp. 639–652. DOI 10.1617/s11527-011-9786-x

18. Talesnick M. and **Katz A.**, "Measuring Lateral Pressure of Concrete: From Casting Through Hardening", *Construction & Building Materials*, Vol. 34, 2012, pp. 211–217.
19. \*Kenny A. and **Katz A.**, "Statistical Relationship Between Mix Properties and the Interfacial Transition Zone Around Embedded Rebar", *Cement and Concrete Composites*, Vol. 60, July 2015, pp. 82–91, doi: 10.1016/j.cemconcomp.2015.04.002
20. \*Ofer-Rozovsky E., Arbel Haddad M., Bar Nes G. and **Katz A.**, "The Formation of Crystalline Phases in Metakaolin-Based Geopolymers in the Presence of Sodium Nitrate", *Materials Science*, Vol. 51 No. 10, 2016, pp. 4785–4814, DOI: 10.1007/s10853-016-9767-0
21. **Katz A.** and \*Kulich D., "Performance of Mortars Containing Recycled Fine Aggregate from Construction and Demolition Waste", *Materials and Structures*, Vol. 50, 2017, pp. 199–214, DOI: 10.1617/s11527-017-1067-x
22. Arbel Haddad M., \*Ofer-Rozovsky E., Bar-Nes G., Borojovich E.J.C., Nikolski A., Mogiliansky D., and **Katz A.**, "Formation of Zeolites in Metakaolin-Based Geopolymers and their Potential Application for Cs Immobilization", *Journal of Nuclear Materials*, Vol. 493, September 2017, pp. 168–179, DOI: 10.1016/j.jnucmat.2017.05.046.
23. **Katz A.**, "Statistical Variations of Rebar Placement and Its Effect on Service Life", *ASCE's Practice Periodical on Structural Design and Construction*, Vol. 23, No. 3, 04018017, 2018, 15p.

## Conferences

### Invited talks

1. Quantification of Environmental Impacts: Implication for Concrete Technology, Int. Conference on Concrete and Reinforced Concrete – Development Trends and 59<sup>th</sup> RILEM week, Moscow, Russia, 2005.
2. The Impact of Environmental Considerations on Concrete Technology, Int. Conference on Advances in Cement and Concrete: Sustainability, Davos, Switzerland, 2006.
3. Environmental Considerations in Using FRP Rebars in Concrete Pavements, The Third International Conference on FRP Composites in Civil Engineering, Miami, USA, 2006.

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\* Student, supervised by A. Katz

4. Recycling of construction waste in Israel-Research and Practice, International Seminar and Competition for Green Resources of Construction Waste, Jeju, Korea, 2010.
5. Lead Paper – Can Artificial Recycled Fine Aggregate Truly Represent Fine Aggregated from C&DW, Second International Conference on Concrete Sustainability – ICCS16, Madrid Spain, 2016.

#### Selected Refereed Papers in Conference Proceedings

1. Brough A.R., **Katz A.**, Bekharev T., Kirkpatrick R.J., Struble L.J. and Young J.F., "Microstructural Aspects of Zeolite Formation in Alkali Activated Cements Containing High Level of Fly Ash", Material Research Society, Proceedings, Vol. 370, "Microstructure of Cement Based Systems/ Bonding and Interfaces in Cementitious Materials", S. Diamond et al. (Eds.), Boston, 1994, pp.199–208.
2. **Katz A.** and Li V.C., "Bond Properties of Micro-Fibers in Cementitious Matrix". Material Research Society, Proceedings, Vol. 370, "Microstructure of Cement Based Systems/ Bonding and Interfaces in Cementitious Materials", S. Diamond et al. (Eds.), Boston, 1994, pp.529–538.
3. **Katz A.**, "Fly-Ash Blended Cement Activated By a Strong Base", 10<sup>th</sup> International Congress on the Chemistry of Cement, Gothenburg, Sweden, June 1997, paper No. 3ii083
4. **Katz A.**, \*Berman N. and Bank L.C., "Effect of Cyclic Loading and Elevated Temperature on the Bond Properties of FRP Rebars", International Conference on the Durability of Fiber Reinforced Polymer (FRP) Composites for Construction, B. Benmokrane and H. Rahman (Eds.), Sherbrooke, Canada, 1998, pp. 403–413.
5. **Katz A.**, "Recycling of Partially Hydrated Concrete", Waste Materials in Construction WASCON 2000, G.R. Woolley, J.J.J.M. Goumans and P.J. Wainwright (Eds.), Leeds, Pergamon, United Kingdom, 2000.
6. †Pushkar S., Becker R. and **Katz A.**, "A Methodology for Optimal Design of Sustainable Buildings", RILEM International Symposium on Environment-Conscious Materials and Systems for Sustainable Development, Kashino, N. and Ohama, Y. (Eds.), Koriyama, Japan, 2004, pp. 229–237.
7. **Katz A.**, "Environmental Assessment of Novel Materials in Infrastructures", RILEM International Symposium on Environment-Conscious Materials and Systems for Sustainable Development-ECM2004, Kashino, N. and Ohama, Y. (Eds.), Koriyama, Japan, 2004, pp. 33–41.
8. Baum H. and **Katz A.**, "Amounts and Composition of Construction Waste from Residential Buildings", Proceedings of International RILEM Conference on the Use of Recycled Materials in Buildings and Structures, Vázquez E., Hendriks Ch.

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\* Student, supervised by A. Katz

† Student, supervised by A. Katz

F. and Janssen G.M.T., 8 - 11 November 2004, Barcelona, Spain, RILEM Publications SARL, 2004, pp. 201-207.

9. **Katz A.**, Bentur A. and Kovler K., "A Novel Technology in Wet Scanning Electron Microscopy", *Advances in Concrete Through Science and Engineering*, J. Marchand, et al. (Eds.), Quebec, Canada, 2006, RILEM Proceedings PRO 51, RILEM Publications S.A.R.L. France p. 257.
10. **Katz A.**, "The Impact of Environmental Considerations on Concrete Technology", *Advances in Cement and Concrete X: Sustainability*, K. Scrivener, P. Monteiro and S. Hanehura (Eds.), Davos, Switzerland, 2006, pp. 103–107.
11. **Katz A.**, "Effect of Surface Deterioration on Stress Transfer between Concrete and FRP Laminate, The 3<sup>rd</sup> International Conference on FRP Composites in Civil Engineering, Mirmiran A. and Nanni A. (Eds.), Miami, USA, 2006, pp. 279–282.
12. Dancygier A. and **Katz A.**, "The Combined Effect of Concrete Strength and Geometric Parameters on Concrete-Reinforcement Bond", *Proceedings of the 8<sup>th</sup> International Symposium on Utilization of High-Strength and High Performance Concrete*, Nihon, Konkurīto, Kōgaku and Kyōkai (Eds.), Tokyo, Japan, 2008, S1-1-3, pp. 357–362.
13. \*Kenny A. and **Katz A.**, "The Effect of Steel-Concrete Microstructure on The Chloride Threshold for Chloride Induced Corrosion", *Proceedings of the 2<sup>nd</sup> international RILEM workshop on Concrete Durability and Service Life Planning-ConcreteLife'09*, Kovler K. (Ed.), Haifa, Israel, Proceedings PRO 66, RILEM Publications S.A.R.L. France, 2009, pp. 92–100.
14. Dancygier A., **Katz A.**, Yankelevsky D. and Yardimci M., "On the Behavior of High Ductility Concrete under Low Impact", *Proceedings of the 7<sup>th</sup> International Symposium on Impact Engineering (ISIE2010)*, Warsaw, Poland, 2010, pp. 197–203.
15. **Katz A.**, Tsesarsky M., Peled A. and Anteby I., "Textiles Reinforced Cementitious Composites for Retrofit and Strengthening of Concrete Structures Under Impact Loading", *Proceedings of High Performance Fiber Reinforced Cement Composites 6*, G.J.Parra–Montesinos, H.W. Renhardt and A.E. Naaman (Eds.), Ann-Arbor, MI, USE, June 2011, pp. 503–510.
16. \*Ofer-Rozovsky E., Bar-Nes G., Arbel-Haddad M. and **Katz A.**, "Immobilization of Low Level Wastes in Geopolymeric Systems", *The 26<sup>th</sup> Conference of the Nuclear Societies in Israel*, 2012, pp. 189–191.
17. **Katz A.** and Bentur A., "Admixture and Filler Technologies for Producing Environmental Friendly Concretes", *Proceedings of fib Symposium Engineering a Concrete Future: Technology, Modeling and Construction*, Dancygier A. (Ed.), Tel-Aviv, Israel, 2013, pp. 89–91.
18. \*Ofer-Rozovsky E., Borojovich E.J.C., Nikolski A., Binyamini A., Arbel-Haddad M., Bar-Nes G. and **Katz A.**, "Geopolymerization at Moderate Temperatures in the Presence of Nitrate Anion", *Proceedings of 2<sup>nd</sup> International*



Symposium on Cement-based Materials for Nuclear Wastes (NUWCEM 2014) (CD-ROM), Avignon, France, June 2014, 14 Pages.

19. **Katz A.**, Bentur A. and Wasserman R., "Effect of Cement Content on Concrete Durability", XIII International Conference on Durability of Building Materials and Components, Quattrone M. and John V.M. (Eds.), Sao Paulo, Brazil, 2014, pp. 1137–1142.
20. Agranati G. and **Katz A.**, "The Effect of Fiber Content and Aggregate Type on the Performance of UHPC", HPFRCC-7 – 7<sup>th</sup> RILEM Workshop on High Performance Fiber Reinforced Cement Composites, Reinhardt H.W., Parra-Montesinos G.J. and Garret H. (Eds.), Stuttgart, Germany, 2015, pp. 95–102.
21. **Katz A.** and \*Kulisch D., "Can Artificial Recycled Fine Aggregate Truly Represent Fine Aggregated from C&DW", 2<sup>nd</sup> International conference on Concrete Sustainability – ICCS, Galvez et al. (Eds.), Madrid, Spain, 2016, EBOOK pp. 1100–1106.
22. **Katz A.** and \*Kulisch D., "Efficiency of Using Recycled Fine Aggregate for a New Concrete", Sustainable Built Environment (SBE) Regional Conference: Expanding Boundaries – Systems Thinking in the Built Environment, Habert G., Schlueter A. (eds.), Zurich, 15-17 2016, pp. 404–407, e-proceedings: <http://vdf.ch/expanding-boundaries.html>, DOI: 10.3218/3774-6\_65.
23. Arbel-Haddad M., \*Ofer-Rozovsky E., Bar-Nes G., Borojovich E.J.C., Nikolski A., **Katz A.**, "Low-Silica Metakaolin-Based Geopolymers as Candidate Matrices for Immobilization of Cesium Ions", NUWCEM2018 – 3<sup>rd</sup> International Symposium on Cement-Based Materials for Nuclear Wastes, 24 – 26 October 2018, Avignon – France.