

# CANAN ACAR

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## I. EDUCATION

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### 2012—2016      **PhD, Mechanical Engineering—University of Ontario Institute of Technology**

- Dissertation: Experimental Investigation and Analyses of Continuous Type Hybrid Photoelectrochemical Hydrogen Production Systems
- Supervisor: Dr. Ibrahim Dincer

### 2007—2010      **Master of Science, Chemical Engineering—Illinois Institute of Technology**

- Dissertation: Hydrogen Storage Using Mg-Mixed Metal Hydrides
- Supervisor: Dr. Hamid Arastoopour

### 2002—2007      **Bachelor of Science, Chemical Engineering—Bogazici University**

- Senior Project: Ziegler – Nichols Tuning of Multiloop PID Controllers
  - Supervisor: Dr. Mehmet Camurdan
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## II. HONORS AND ACADEMIC AWARDS

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**June 2017**      Governor General's Gold Medal for Academic Excellence (Governor General of Canada)

**June 2017**      Outstanding Doctoral Thesis Award (UOIT Office of Graduate Studies)

**June 2017**      Outstanding Doctoral Thesis Award (UOIT Faculty of Engineering and Applied Science)

**2012—2016**      Ontario Trillium Scholarship (Doctoral Level)

**2007—2010**      Illinois Institute of Technology Dean's Fellowship (Master's Level)

**2007—2010**      Illinois Institute of Technology Full Tuition Scholarship (Master's Level)

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## III. TEACHING AND RESEARCH INTERESTS

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- Hydrogen energy
    - Renewable energy-based hydrogen production methods
    - Hydrogen-fuel and fuel cells for mobile and stationary applications
    - Hydrogen storage systems
  - Sustainable and renewable energy systems
  - Energy, exergy, efficiency, and environmental assessment
  - Thermodynamics
  - Energy management
  - Sustainable and alternative energy technologies
  - Chemistry: introduction, general chemistry, chemistry for engineers
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## IV. RESEARCH EXPERIENCE

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### **Bahcesehir University—Faculty of Engineering and Natural Sciences**

*Assistant Professor, September 2016—Present*

- Research on sustainable energy systems, focusing on thermodynamic evaluation of multigeneration systems
- Design and development of novel integrated energy systems for a sustainable future
- Assisting various undergraduate and graduate students on senior projects, and theses as a research adviser

### **University of Ontario Institute of Technology—Faculty of Engineering and Applied Science, Oshawa, ON**

*Doctoral Candidate, September 2012—2016*

- Research on renewable hydrogen production systems, focusing on direct solar to hydrogen conversion
- Design and execution of experimental studies on hybrid photoelectrochemical hydrogen production
- Comprehensive thermodynamic analyses and optimization of experimental studies

### **Illinois Institute of Technology—Armour College of Engineering, Chicago, IL**

*Research Associate, November 2010—July 2011*

- Project funded by Energy Efficiency and Conservation Block Grant (EECBG) Program under American Recovery and Reinvestment Act of 2009
- Developed sustainable material conservation strategies for Cook County units and facilities
- Focused on John G. Stroger Hospital, Juvenile Temporary Detention Center, and the Correctional Center

**Illinois Institute of Technology—Armour College of Engineering, Chicago, IL***Research Assistant, August 2007—July 2010*

- Conducted research on hydrogen storage technologies
- Developed novel MgH<sub>2</sub>-LaNi<sub>5</sub>-Nb<sub>2</sub>O<sub>5</sub> sorbent by high energy ball milling to store hydrogen
- Performed experiments to measure hydrogen storage capacity of the novel sorbent

**V. TEACHING EXPERIENCE****Bahcesehir University—Faculty of Engineering and Natural Sciences***Assistant Professor, September 2016—Present*

- Courses taught: ESE2003—Fundamentals of Thermodynamics, ESE2008—Heat and Mass Transfer, ESE2302—Energy Economics, ESE4101—Sustainable Energy, ESE5501—Energy Management, ESE5502 - Sustainable Energy Systems, MCH5461—Transport Phenomena
- Plan course material, organize the semester schedule, and develop course syllabuses
- Present subject matter to undergraduate and graduate students from different backgrounds
- Instruct and support students in order to strengthen basic and advanced engineering subjects
- Evaluate students' progress via assignments, quizzes, projects, and exams

**University of Ontario Institute of Technology—Faculty of Science, Oshawa, ON***Graduate Teaching Assistant, September 2012—April 2016*

- Courses taught: CHEM1010U—Chemistry I and CHEM1800U—Chemistry for Engineers
- Prepare course materials and present subject matter to students
- Tutor and assist students in order to reinforce learning concepts
- Grade assignments, quizzes, and exams

**VI. PUBLICATIONS****Peer-Reviewed Journals**

1. Acar, C., Dincer, I. (2017). Energy and exergy analyses of a novel photoelectrochemical hydrogen production system. *International Journal of Hydrogen Energy* – under review.
2. Acar, C., Dincer, I. (2017). Energetic and exergetic investigations of an innovative light-based hydrogen production reactor. *International Journal of Hydrogen Energy* – in press.
3. Acar, C., Dincer, I. (2017). A comparative environmental impact assessment of renewables and conventional fuels for electricity and hydrogen production. *International Journal of Global Warming* – in press.
4. Acar, C., Dincer, I. (2017). Thermodynamic analysis and experimental investigation of a unique photoelectrochemical hydrogen production system. *International Journal of Hydrogen Energy* – in press.
5. Taulavuori, E., Taulavuori, K., Holopainen, J. K., Julkunen-Tiitto, R., Acar, C., Dincer, I. (2017). Targeted use of LEDs in improvement of production efficiency through phytochemical enrichment. *Journal of the Science of Food and Agriculture* – in press.
6. Dincer, I., Acar, C. (2017). Innovation in hydrogen production. *International Journal of Hydrogen Energy* 42, 14843–14864.
7. Dincer, I., Acar, C. (2017). Smart energy systems for a sustainable future. *Applied Energy*, 194, 225-235.
8. Acar, C., Dincer, I. (2017). Testing and performance evaluation of a hybrid photoelectrochemical hydrogen production system. *International Journal of Hydrogen Energy* 42: 3605–3613.
9. Acar, C., Dincer, I. (2017). Experimental investigation and analysis of a hybrid photoelectrochemical hydrogen production system. *International Journal of Hydrogen Energy* 42, 2504–2511.
10. Acar, C., Dincer, I., Naterer, G. F. (2016). Clean hydrogen and power from impure water. *Journal of Power Sources* 31: 189–197.
11. Acar, C., Dincer, I., Naterer, G. F. (2016). Review of photocatalytic water splitting methods for sustainable hydrogen production. *International Journal of Energy Research* 40: 1449–1473.
12. Acar, C., Dincer, I. (2016). A review and evaluation of photoelectrode coating materials and methods for photoelectrochemical hydrogen production. *International Journal of Hydrogen Energy* 41: 7950–7959.
13. Dincer, I., Acar, C. (2016). A review on potential use of hydrogen in aviation applications. *International Journal of Sustainable Aviation* 2: 74–100.
14. Acar, C., Dincer, I. (2016). Energy and exergy analyses of a residential cold thermal energy storage system. *International Journal of Exergy* 19: 441–458.

15. Acar, C., Dincer, I. (2016). Exergetic performance assessment of an integrated solar energy system. *International Journal of Exergy* 19: 161–172.
16. Dincer, I., Acar, C. (2015). A review on clean energy solutions for better sustainability. *International Journal of Energy Research* 39: 585–606.
17. Acar, C., Ghosh, S., Dincer, I., Zamfirescu, C. (2015). Evaluation of a new continuous type hybrid photo-electrochemical system. *International Journal of Hydrogen Energy* 40: 11112–11124.
18. Acar, C., Dincer, I. (2015). Impact assessment and efficiency evaluation of hydrogen production methods. *International Journal of Energy Research* 39: 1757–1768.
19. Dincer, I., Acar, C. (2015). Review and evaluation of hydrogen production methods for better sustainability. *International Journal of Hydrogen Energy* 40: 11094–11111.
20. Acar, C., Dincer, I., Zamfirescu, C. (2014). A review on selected heterogeneous photocatalysts for hydrogen production. *International Journal of Energy Research* 38: 1903–1920.
21. Acar, C., Dincer, I. (2014). Analysis and assessment of a continuous-type hybrid photoelectrochemical system for hydrogen production. *International Journal of Hydrogen Energy* 39: 15362–15372.
22. Acar, C., Dincer, I. (2014). Comparative assessment of hydrogen production methods from renewable and nonrenewable sources. *International Journal of Hydrogen Energy* 39: 1–12.

### Book Chapters

1. Acar, C., Dincer, I. (2017) "Potential Energy Solutions for Better Sustainability" *Exergetic, Energetic and Environmental Dimensions* Elsevier: Oxford – *in press*.
2. Acar, C., Dincer, I. (2017) "Hydrogen Energy." *Comprehensive Energy Systems* Elsevier: Oxford – *in press*.
3. Acar, C., Dincer, I. (2017) "Hydrogen Energy Conversion Systems." *Comprehensive Energy Systems* Elsevier: Oxford – *in press*.
4. Acar, C., Dincer, I. (2017) "Hydrogen Production." *Comprehensive Energy Systems* Elsevier: Oxford – *in press*.
5. Acar, C., Dincer, I. (2017) "Photoactive Materials." *Comprehensive Energy Systems* Elsevier: Oxford – *in press*.
6. Acar, C., Dincer, I. (2014) "Energy and Exergy Analyses of a Zero Emission Power Plant for Coproduction of Electricity and Methanol." *Progress in Exergy, Energy, and the Environment* Springer: New York, 145–156.
7. Acar, C., Dincer, I. (2014) "Performance Assessment of a Two-stage Heat Pump–Drying System." *Progress in Sustainable Energy Technologies: Generating Renewable Energy* Springer: New York, 149–164.
8. Acar, C., Dincer, I. (2013) "Comparative Environmental Impact Evaluation of Hydrogen Production Methods from Renewable and Nonrenewable Sources." *Causes, Impacts and Solutions to Global Warming*. Springer: New York, 493–514.

### Peer-Reviewed Conference Proceedings

1. Acar, C., Dincer, I. (2017) Thermodynamic and Experimental Investigation of a Unique Photoelectrochemical Hydrogen Production System, *Proceedings of the International Exergy, Energy, and Environment Symposium*, Split, Croatia, May 14–17, 2017, Paper ID: 292.
2. Acar, C., Dincer, I. (2017) Energetic and Exergetic Investigations of an Innovative Light-Based Hydrogen Production Reactor, *Proceedings of the International Hydrogen Technologies Congress*, Adana, Turkey, March 15–18, 2017, Paper ID: 52.
3. Acar, C., Dincer, I. (2016) Energy and Exergy Analyses of a Novel Solar Driven Hydrogen Production System, *Proceedings of the International Conference on Energy Systems*, Istanbul, Turkey, December 21–23, 2016, Paper ID: 98.
4. Acar, C., Dincer, I. (2016) Testing and Performance Evaluation of a Hybrid Photoelectrochemical Hydrogen Production System, *Proceedings of the International Conference on Hydrogen Production*, Hangzhou, P. R. China, May 8–11, 2016, Paper ID: 76.
5. Acar, C., Dincer, I. (2015) Environmental Impact Assessment of Renewables and Conventional Fossil Fuels for Different End Use Purposes, *Proceedings of the Global Conference on Global Warming*, Athens, Greece, May 24–27, 2015, Paper ID: 294.
6. Acar, C., Dincer, I. (2015) Evaluation of Photoelectrode Coating Materials and Methods for Photoelectrochemical Hydrogen Production, *Proceedings of the International Conference on Hydrogen Production*, Oshawa, Canada, May 3–6, 2015, Paper ID: 1003.
7. Acar, C., Dincer, I. (2014) Performance Assessment of a Novel Integrated Solar Absorption Cooling and Heating System, *Proceedings of the International Ege Energy Symposium*, Usak, Turkey, June 18–20, 2014, Paper ID: 56.
8. Acar, C., Dincer, I. (2014) Energy and Exergy Analyses of a Residential Cold Thermal Energy Storage System, *Proceedings of the International Conference on Clean Energy*, Istanbul, Turkey, June 8–12, 2014, Paper ID: 78.

9. Acar, C., Dincer, I. (2014) Environmental Impact Assessment of Hydrogen Production Methods from Renewable and Nonrenewable Sources, *Proceedings of the Global Conference on Global Warming*, Beijing, P. R. China, May 25–29, 2014, Paper ID: 40.
10. Acar, C., Dincer, I. (2014) Modeling and Analysis of a Continuous Type Hybrid Photoelectrochemical Hydrogen Production System, *Proceedings of the International Conference on Hydrogen Production*, Fukuoka, Japan, February 2–5, 2014, Paper ID: 135.
11. Acar, C., Dincer, I. (2013) Energy and Exergy Analysis of a Zero Emission Power Plant for Co-Production of Electricity and Methanol, *Proceedings of the International Exergy, Energy and Environment Symposium*, Rize, Turkey, July 1–4, 2013, Paper ID: 366.

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## VII. CONFERENCE PRESENTATIONS

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- March 2016**      AIChE Annual Midwest Regional Conference — Chicago, IL, USA, March 3–4, 2016  
Experimental Investigation and Analysis of a Hybrid Photoelectrochemical Hydrogen Production System
- November 2010**      AIChE Annual Meeting — Salt Lake City, UT, USA, November 14–16, 2010  
Hydrogen Storage Using Mg-Mixed Metal Hydrides

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## VIII. REFEREE/REVIEWER

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- Chemical Engineering Research and Design, Elsevier Science Ltd., UK
- Energy-The International Journal, Elsevier Science Ltd., UK
- Energy Conversion and Management, Elsevier Science Ltd., UK
- Environmental Science and Technology, ACS Publications, USA
- International Journal of Energy Research, John Wiley & Sons Ltd., UK
- International Journal of Exergy, Inderscience Enterprise Ltd., Switzerland
- International Journal of Global Warming, Inderscience Enterprise Ltd., Switzerland
- International Journal of Hydrogen Energy, Elsevier Science Ltd., UK

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## IX. INTERNATIONAL CONFERENCE ORGANIZATION

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- Organizing Committee Member, *International Conference on Clean Energy (ICCE-2014)* Istanbul, Turkey, June 8–12, 2014.
- Organizing Committee Member, *International Conference on Hydrogen Production (ICH2P-2015)* Oshawa, Canada, May 3–6, 2015.

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## X. PROFESSIONAL MEMBERSHIPS

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- American Institute of Chemical Engineers (AIChE)
- American Society of Mechanical Engineers (ASME)
- International Association for Hydrogen Energy (IAHE)
- Hidrojen Teknolojileri Dernegi (Turkish Association of Hydrogen Technologies)

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## XI. SKILLS

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- C, ChemCAD, EES, MATLAB, Polymath
- MS Office (Excel, Word, PowerPoint, Visio, Access, Outlook)

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**XII. REFERENCES**

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**PROF. DR. IBRAHIM DINCER**

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