

# DR. IPEK AYTAC

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## EDUCATION

- 2003-2006 **High School**, Gazi University Foundation Private Science High School, Ankara, Turkey.
- 2006-2011 **B.Sc.**, Baskent University, Faculty of Engineering, Mechanical Engineering, Ankara, Turkey.
- 2012-2014 **M.Sc.**, Gazi University, Faculty of Technology, Energy Systems Engineering Department, Ankara, Turkey.  
**Thesis Title:** Heat Transfer Performance Enhancement by Using Alumina Nanofluid in the Parallel and Cross- Flow Concentric Tube Heat Exchangers  
**Supervisor:** Prof. Dr. Adnan SÖZEN
- 2016-2020 **Ph.D.**, Gazi University, Faculty of Technology, Energy Systems Engineering Department, Ankara, Turkey  
**Thesis Title:** Use of Nano Fluid in Heat Recovery Units  
**Supervisor:** Prof. Dr. Adnan SÖZEN

## EXPERIENCE

### Work Experience

- 2018- 2021 **Research Assistant**, University of Turkish Aeronautical Association, Faculty of Engineering, Department of Mechanical Engineering, Ankara, Turkey.
- 2021-Ongoing **Assistant Prof. Dr.** University of Turkish Aeronautical Association, Faculty of Engineering, Department of Mechanical Engineering, Ankara, Turkey.

## PUBLICATIONS

### Articles published in peer reviewed international journals (SCI, SCI Expanded):

1. Tuncer A. D., Khanlari A., **Aytaç İ.**, Çiftçi E., Sözen A., Variyenli H. İ. (2022). Passive thermal management of photovoltaic panel by using phase change material-filled aluminum cans: an experimental study, Heat Transfer Research, 53(5), 73-86, Doi: 10.1615/HeatTransRes.2022041473
2. **Aytaç İ.** (2022). Determination of the thermal behavior of water-based Fe<sub>3</sub>O<sub>4</sub> nanofluid using thermophysical property models, Heat Transfer Research, 53(18), 57-75, Doi: 10.1615/HeatTransRes.2022043374
3. **Aytaç İ.** (2022). Experimental investigation on heat transfer performance of Fe<sub>2</sub>O<sub>3</sub>/water and Fe<sub>3</sub>O<sub>4</sub>/water nanofluids in a plate heat exchanger, Heat Transfer Research, 53(15), 69-93, Doi: 10.1615/HeatTransRes.2022043164
4. Khanlari A., Tuncer A. D., Sözen A., **Aytaç İ.**, Çiftçi E., Variyenli H. İ. (2022). Energy and exergy analysis of a vertical solar air heater with nano-enhanced absorber coating and perforated baffles, Renewable Energy, 187, 586-602, Doi: 10.1016/j.renene.2022.01.074

5. Çiftçi E., Khanlari A., Sözen A., **Aytaç İ.**, Tuncer A. D. (2021). Energy and exergy analysis of a photovoltaic thermal (PVT) system used in solar dryer: A numerical and experimental investigation, *Renewable Energy*, 180, 410-423, Doi: 10.1016/j.renene.2021.08.081
6. Sözen A., Filiz Ç., **Aytaç İ.**, Martin K., Ali H. M., Boran K., Yetişken Y. (2021). Upgrading of the Performance of an Air-to-Air Heat Exchanger Using Graphene/Water Nanofluid. *International Journal of Thermophysics*, 42(35), Doi: 10.1007/s10765-020-02790-w
7. **Aytaç İ.**, Sözen A., Martin K., Filiz Ç., Ali H. M. (2020). Improvement of Thermal Performance using Spineloxides/Water Nanofluids in the Heat Recovery Unit with Air-to-Air Thermosiphon Mechanism, *International Journal of Thermophysics*, 41(158), Doi: 10.1007/s10765-020-02739-z
8. Sözen A., Martin K., **Aytaç İ.**, Filiz Ç. (2020). Upgrading the performance of heat recovery unit containing heat pipes by using a hybrid (CuO + ZnO)/water nanofluid, *Heat Transfer Research*, 51(14), 1289-1300, Doi: 10.1615/HeatTransRes.2020035393
9. Sözen A., Variyenli H. İ., Özdemir M. B., Gürü M., **Aytaç İ.** (2016). Heat transfer enhancement using alumina and fly ash nanofluids in parallel and cross-flow concentric tube heat exchangers, *Journal of the Energy Institute*, 89(3), 414-424, Doi: 10.1016/j.joei.2015.02.012

#### **Articles published in other peer reviewed international journals (ESCI):**

1. Karaçam T., Variyenli H. İ., Martin K., Khanlari A., **Aytaç İ.** (2022). Experimental investigation of the Effect of Using Thermostatic Radiator Valve on Energy Efficiency in Buildings, *Journal of Polytechnic*, early view, Doi: 10.2339/politeknik.1031156
2. Yürük M., Variyenli H. İ., Martin K., Khanlari A., **Aytaç İ.** (2022). Experimental Evaluation of Installation Cleaning in Terms of Energy Efficiency in Individual Heating Systems, *Journal of Polytechnic*, 25(3), 1375-1384, Doi: 10.2339/politeknik.1025494
3. **Aytaç İ.**, Sözen A. (2022). Performance improvement of the heat recovery unit with sequential type heat pipes using water based ZnO and ZnOAl<sub>2</sub>O<sub>3</sub> nanofluids, *Journal of Polytechnic*, 25(1), 1-7, Doi: 10.2339/politeknik.703083
4. **Aytaç İ.** (2021). Investigation of the effect of CuO/water and ZnO/water nanofluids on heat pipe performance, *Journal of Polytechnic*, 24(3), 963-971, Doi: 10.2339/politeknik.755358

#### **Articles published in peer reviewed national journals:**

1. **Aytaç İ.** (2020). Thermal Behaviors of Thermophysical Properties of Hybrid Nanofluids, *Gazi University Journal of Science Part C: Design and Technology*, 8(4), 810-829, Doi: 10.29109/gujsc.756583

#### **Papers delivered in international conferences and printed as proceedings:**

1. **Aytaç İ.** A Detailed Investigation on Using Single and Hybrid Nanofluid in a Plate Heat Exchanger with 16 Plates. 4. International Gobeklipepe Scientific Research Congress, October 07-08, 2022, Şanlıurfa, Turkey.
2. **Aytaç İ.** Determination of Thermal Performance Improvement of a Heat Exchanger Including Heat Pipe System Utilizing Water Based FeOAl<sub>2</sub>O<sub>3</sub> and FeCuO Nanofluids. International Black Sea Modern Scientific Research Congress, September 29 - October 02, 2022, Rize, Turkey.
3. **Aytaç İ.** Numerical Analysis of the Impact of Different Turbulator Modifications on the Overall Behavior of a Concentric Type Heat Exchanger. 3. Baskent International Conference on Multidisciplinary Studies, September 23-25, 2022, Ankara, Turkey.
4. **Aytaç İ.** The Influence of Using Hybrid Type Nanofluid in a Concentric Tube-Type Heat Exchanger on Thermal Performance. 2<sup>nd</sup> International Istanbul Congress of Multidisciplinary Scientific Research, September 28-29, 2022, İstanbul, Turkey.

5. **Aytaç İ.** Investigation of Thermophysical Characteristics of Aqueous Ferro Nanofluids. International Symposium on Current Developments in Science, Technology and Social Sciences (BILTEK-VI), September 16-18, 2022, Malatya, Turkey.
6. **Aytaç İ.** Upgrading of the Performance of a Heat Exchanger Utilizing Graphene/Water Nanofluid. 3rd International Engineering and Architecture Congress, May 28-29, 2022, Diyarbakır, Turkey.
7. **Aytaç İ.** Determination of The Thermophysical Properties of Nanofluids Using Models in the Literature. 4. International Sciences and Innovation Congress, February 19-20, 2022, Ankara, Turkey.
8. **Aytaç İ.** Heat Transfer Enhancement Using Nanofluids in Heat Pipes. V. International Icontech Conference on Innovative Surveys in Positive Sciences, February 5-6, 2022, Şanlıurfa, Turkey.
9. Sözen A., Çiftçi E., **Aytaç İ.** Preparation of Aqueous Fe+CuO, ZnO+Al<sub>2</sub>O<sub>3</sub> and CuO+Al<sub>2</sub>O<sub>3</sub> Hybrid Nanofluids and Thermal System Applications. International Conference on Advanced Materials Science Engineering and High Tech Device Applications (ICMATSE), 11-14, October 02-04, 2020, Ankara, Turkey.
10. Martin K., **Aytaç İ.**, Filiz Ç., Sözen A., İskender Ü. Upgrading of Performance of Air to Air Heat Pipe Heat Exchanger by Using CuO+ZnO Hybrid Nano Fluid. 8<sup>th</sup> European Conference on Renewable Energy Systems (ECRES), August 24-25, 2020, İstanbul, Turkey.
11. Martin K., **Aytaç İ.**, Filiz Ç., Sözen A., Kiliç C. Experimental Investigation of the Use of MgO+ZnO Mixture in Thermosiphon Type Heat Pipes within the Scope of Air-to-Air Heat Exchanger Design. 8th European Conference on Renewable Energy Systems (ECRES), August 24-25, 2020, İstanbul, Turkey.
12. **Aytaç İ.** Improvement of Thermal Performance by Using ZnO/Al<sub>2</sub>O<sub>3</sub>/Water Nanofluid in Heat Pipe Heat Recovery Unit. 2nd International Eurasian Conference on Science, Engineering and Technology, October 07-09, 2020, Gaziantep, Turkey.
13. **Aytaç İ.** Experimental Investigation of the Effect of Using ZnO / Water Nanofluid on the Thermal Performance of the Air-to-Air Heat Recovery Unit. 2nd International Eurasian Conference on Science, Engineering and Technology, October 07-09, 2020, Gaziantep, Turkey.
14. **Aytaç İ.** Effects of the Law on Occupational Health and Safety in Turkey on Work Accidents and Deaths. 4. International Medicine and Health Sciences Research Congress, August 22-23, 2020, Çorum, Turkey.

## RESEARCH AREAS

Heat transfer, heat exchanger, nanofluids, thermal performance

## CERTIFICATIONS

Certificate of Occupational Health and Safety Expertise, Class C (National Certificate).