

## Assoc. Prof. BURAK MARKAL

### Personal Information

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### International Researcher IDs

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Publons / Web Of Science ResearcherID: AAM-2402-2021

ScopusID: 35746571700

Yoksis Researcher ID: 266535

### Education Information

Doctorate, Karadeniz Technical University, Mühendislik Fakültesi, Makine Mühendisliği, Turkey 2010 - 2016

Postgraduate, Karadeniz Technical University, Mühendislik Fakültesi, Makine Mühendisliği, Turkey 2007 - 2010

Undergraduate, Karadeniz Technical University, Mühendislik Fakültesi, Makine Mühendisliği, Turkey 2003 - 2007

### Foreign Languages

English, C1 Advanced

### Dissertations

Doctorate, An experimental investigation of flow boiling in microchannels, Karadeniz Technical University, Fen Bilimleri Enstitüsü, 2016

Postgraduate, Experimental and theoretical investigation of energy separation in Ranque-Hilsch vortex tube, Karadeniz Technical University, Fen Bilimleri Enstitüsü, 2010

### Research Areas

Mechanical Engineering, Fluid Mechanics, Thermodynamics, Heat and Mass Transfer, Thermal Systems

### Academic Titles / Tasks

Associate Professor, Karadeniz Technical University, Mühendislik Fakültesi, Makine Mühendisliği, 2023 - Continues

Associate Professor, Recep Tayyip Erdogan University, Mühendislik Ve Mimarlık Fakültesi, Makine Mühendisliği, 2019 - 2023

Assistant Professor, Recep Tayyip Erdogan University, Mühendislik Fakültesi, Enerji Sistemleri Mühendisliği Bölümü, 2017 - 2019

Research Assistant, Karadeniz Technical University, Mühendislik Fakültesi, Makine Mühendisliği, 2007 - 2009

## Academic and Administrative Experience

Head of Department, Recep Tayyip Erdogan University, Mühendislik Ve Mimarlık Fakültesi, Makine Mühendisliği, 2022 - 2023

Deputy Head of Department, Recep Tayyip Erdogan University, Mühendislik Ve Mimarlık Fakültesi, Makine Mühendisliği, 2020 - 2022

## Advising Theses

Markal B., Karışımlarla yüklü üniform olmayan yapıya sahip atımlı ısı borularının deneysel incelenmesi, Postgraduate, R.VAROL(Student), 2022

Markal B., Mikro pim tipi kanatçıklara sahip ısı alıcılarda kaynamalı akışın deneysel incelenmesi, Postgraduate, B.KUL(Student), 2022

Markal B., Düz plakalı kapalı döngülü atımlı ısı borularının ısı transfer karakteristikleri ve akış davranışının deneysel incelenmesi, Postgraduate, K.AKSOY(Student), 2020

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Investigation of heat transfer limits for flow boiling in expanding heat sinks having micro pin fins**  
MARKAL B., EVCİMEN A., ATCI F., AYDIN O.  
INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, vol.156, 2024 (SCI-Expanded)
- II. **Transient behavior of flow boiling in structured microchannels under sudden and highly variable heat loads**  
MARKAL B., EVCİMEN A.  
INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, vol.154, 2024 (SCI-Expanded)
- III. **Effect of inlet temperature on flow boiling behavior of expanding micro-pin-fin type heat sinks**  
Markal B., Evcimen A., Aydın O.  
INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, vol.149, 2023 (SCI-Expanded)
- IV. **Comparative investigation of different types of expanding micro-pin-fin heat sinks at low mass flux**  
Markal B., Kul B., Aydın O.  
INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, vol.148, 2023 (SCI-Expanded)
- V. **Effect of a new type staggered pin fin configuration on flow boiling characteristics of micro-heat sinks**  
Markal B., Kul B.  
JOURNAL OF THE BRAZILIAN SOCIETY OF MECHANICAL SCIENCES AND ENGINEERING, vol.45, no.10, 2023 (SCI-Expanded)
- VI. **Influence of downstream cross-sectional area ratio on flow boiling characteristics of expanding micro pin fin heat sinks**  
Markal B., Kul B.  
INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, vol.143, 2023 (SCI-Expanded)
- VII. **Experimental investigation and a new predictive tool for thermal performance of pulsating heat pipes**  
Markal B., Varol R.  
JOURNAL OF THE BRAZILIAN SOCIETY OF MECHANICAL SCIENCES AND ENGINEERING, vol.45, no.1, 2023 (SCI-Expanded)
- VIII. **Effect of gradually expanding flow passages on flow boiling of micro pin fin heat sinks**  
Markal B., Kul B., Avcı M., Varol R.  
INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, vol.197, 2022 (SCI-Expanded)
- IX. **Combined influence of artificial nucleation site and expanding cross section on flow boiling**

**performance of micro pin fins**

Markal B., Kul B.

INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, vol.135, 2022 (SCI-Expanded)

- X. **Effect of double cross sectional ratio on performance characteristics of pulsating heat pipes**  
MARKAL B., Candere A., AVCI M., AYDIN O.  
International Communications in Heat and Mass Transfer, vol.127, 2021 (SCI-Expanded)
- XI. **Investigation of the effects of miscible and immiscible binary fluids on thermal performance of pulsating heat pipes**  
Markal B., Varol R.  
HEAT AND MASS TRANSFER, vol.57, no.9, pp.1527-1542, 2021 (SCI-Expanded)
- XII. **Investigation of flat plate type pulsating heat pipes via flow visualization-assisted experiments: Effect of cross sectional ratio**  
MARKAL B., Candere A., AVCI M., AYDIN O.  
International Communications in Heat and Mass Transfer, vol.125, 2021 (SCI-Expanded)
- XIII. **The combined effects of filling ratio and inclination angle on thermal performance of a closed loop pulsating heat pipe**  
Markal B., Aksoy K.  
HEAT AND MASS TRANSFER, vol.57, no.5, pp.751-763, 2021 (SCI-Expanded)
- XIV. **Experimental investigation and force analysis of flat-plate type pulsating heat pipes having ternary mixtures**  
Markal B., Varol R.  
INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, vol.121, 2021 (SCI-Expanded)
- XV. **Conical coaxial impinging air jets: angle effect on the heat transfer performance**  
MARKAL B., AVCI M., AYDIN O.  
HEAT AND MASS TRANSFER, vol.56, no.12, pp.3135-3146, 2020 (SCI-Expanded)
- XVI. **Thermal investigation and flow pattern analysis of a closed-loop pulsating heat pipe with binary mixtures**  
Markal B., Varol R.  
JOURNAL OF THE BRAZILIAN SOCIETY OF MECHANICAL SCIENCES AND ENGINEERING, vol.42, no.10, 2020 (SCI-Expanded)
- XVII. **Prediction of Two-Phase Heat Transfer Coefficient of Flow Boiling in Minichannels**  
MARKAL B., Candan A., AYDIN O., Avci M.  
HEAT TRANSFER ENGINEERING, vol.41, no.1, pp.17-35, 2020 (SCI-Expanded)
- XVIII. **Flow boiling characteristics in a novel minichannel with a step on each corner**  
Markal B., Candan A., Aydin O.  
EXPERIMENTAL HEAT TRANSFER, vol.33, no.1, pp.1-17, 2020 (SCI-Expanded)
- XIX. **The effect of Total flowrate on the cooling performance of swirling coaxial impinging jets**  
Markal B.  
HEAT AND MASS TRANSFER, vol.55, no.11, pp.3275-3288, 2019 (SCI-Expanded)
- XX. **Effect of hydraulic diameter on flow boiling in rectangular microchannels**  
Markal B., AYDIN O., Avci M.  
HEAT AND MASS TRANSFER, vol.55, no.4, pp.1033-1044, 2019 (SCI-Expanded)
- XXI. **Prediction of Pressure Drop for Flow Boiling in Rectangular Multi-Microchannel Heat Sinks**  
Markal B., AYDIN O., Avci M.  
HEAT TRANSFER ENGINEERING, vol.40, pp.26-38, 2019 (SCI-Expanded)
- XXII. **Experimental investigation of flow boiling in single minichannels with low mass velocities**  
Markal B., Candan A., AYDIN O., Avci M.  
INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, vol.98, pp.22-30, 2018 (SCI-Expanded)
- XXIII. **Experimental investigation of heat transfer characteristics and wall pressure distribution of swirling coaxial confined impinging air jets**  
Markal B.

- INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, vol.124, pp.517-532, 2018 (SCI-Expanded)
- XXIV. **Experimental investigation of coaxial impinging air jets**  
Markal B., AYDIN O.  
APPLIED THERMAL ENGINEERING, vol.141, pp.1120-1130, 2018 (SCI-Expanded)
- XXV. **EXPERIMENTAL STUDY OF SINGLE-PHASE FLUID FLOW AND HEAT TRANSFER CHARACTERISTICS IN RECTANGULAR MICROCHANNELS**  
Markal B., AYDIN O., Avci M.  
ISI BILIMI VE TEKNIGI DERGISI-JOURNAL OF THERMAL SCIENCE AND TECHNOLOGY, vol.38, no.1, pp.65-72, 2018 (SCI-Expanded)
- XXVI. **Saturated flow boiling characteristics in single rectangular minichannels: effect of aspect ratio**  
Candan A., MARKAL B., AYDIN O., Avci M.  
EXPERIMENTAL HEAT TRANSFER, vol.31, no.6, pp.531-551, 2018 (SCI-Expanded)
- XXVII. **Prediction of Heat Transfer Coefficient in Saturated Flow Boiling Heat Transfer in Parallel Rectangular Microchannel Heat Sinks: An Experimental Study**  
Markal B., AYDIN O., Avci M.  
HEAT TRANSFER ENGINEERING, vol.38, no.16, pp.1415-1428, 2017 (SCI-Expanded)
- XXVIII. **An experimental investigation of saturated flow boiling heat transfer and pressure drop in square microchannels**  
Markal B., AYDIN O., Avci M.  
INTERNATIONAL JOURNAL OF REFRIGERATION-REVUE INTERNATIONALE DU FROID, vol.65, pp.1-11, 2016 (SCI-Expanded)
- XXIX. **Effect of aspect ratio on saturated flow boiling in microchannels**  
MARKAL B., AYDIN O., Avci M.  
INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, vol.93, pp.130-143, 2016 (SCI-Expanded)
- XXX. **An experimental study on the decaying swirl flow in a tube**  
AYDIN O., Avci M., MARKAL B., YAZICI M.  
INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, vol.55, pp.22-28, 2014 (SCI-Expanded)
- XXXI. **Using artificial neural network for predicting performance of the Ranque-Hilsch vortex tube**  
Korkmaz M. E., GÜMÜŞEL L., MARKAL B.  
INTERNATIONAL JOURNAL OF REFRIGERATION-REVUE INTERNATIONALE DU FROID, vol.35, no.6, pp.1690-1696, 2012 (SCI-Expanded)
- XXXII. **Exergy analysis of a counter-flow Ranque-Hilsch vortex tube having different helical vortex generators**  
MARKAL B., AYDIN O., Avci M.  
INTERNATIONAL JOURNAL OF EXERGY, vol.10, no.2, pp.228-238, 2012 (SCI-Expanded)
- XXXIII. **A new vortex generator geometry for a counter-flow Ranque-Hilsch vortex tube**  
AYDIN O., MARKAL B., Avci M.  
APPLIED THERMAL ENGINEERING, vol.30, no.16, pp.2505-2511, 2010 (SCI-Expanded)
- XXXIV. **An experimental study on the effect of the valve angle of counter-flow Ranque-Hilsch vortex tubes on thermal energy separation**  
MARKAL B., AYDIN O., Avci M.  
EXPERIMENTAL THERMAL AND FLUID SCIENCE, vol.34, no.7, pp.966-971, 2010 (SCI-Expanded)

## Articles Published in Other Journals

- I. **Thermo-Fluidic Analysis of Pulsating Heat Pipes Charged with Water-Based Immiscible Fluid Pairs**  
MARKAL B., VAROL R.  
Düzce Üniversitesi Bilim ve Teknoloji Dergisi, vol.12, no.1, pp.63-80, 2024 (Peer-Reviewed Journal)
- II. **MİKRO PİM TİPİ KANATÇIKLI VE MİKRO OYUKLU ISI ALICIDA DOYMUŞ KAYNAMALI AKIŞIN DENEYSEL İNCELENMESİ**

- Markal B., Kul B.  
Konya mühendislik bilimleri dergisi (Online), vol.11, no.1, pp.103-123, 2023 (Peer-Reviewed Journal)
- III. **Düşük Dolum Oranında İkili Karışımlarla Yüklü Üniform Olmayan Atımlı Isı Borusunun Deneysel İncelenmesi**  
Markal B., Varol R.  
Düzce Üniversitesi Bilim ve Teknoloji Dergisi, vol.9, no.4, pp.1086-1100, 2021 (Peer-Reviewed Journal)
- IV. **Dönmeli Eş Eksenli Çarpan Jetlerde Isı Transferinin Deneysel İncelenmesi**  
MARKAL B., AYDIN O.  
Tesisat Mühendisliği, vol.2020, no.175, pp.39-45, 2020 (Peer-Reviewed Journal)
- V. **Dönmeli Eş-Eksenli Hava Jetinin Isıl Davranışının Yakın Çarpma Mesafeleri için Deneysel Olarak İncelenmesi**  
MARKAL B.  
Uluslararası Mühendislik Araştırma ve Geliştirme Dergisi, vol.12, no.2, pp.443-453, 2020 (Peer-Reviewed Journal)
- VI. **Kare Kesitli Mikrokanallarda Doymuş Kaynamalı Akış Karakteristiklerinin Deneysel İncelenmesi**  
MARKAL B., AYDIN O., AVCI M.  
Mühendis ve Makina, vol.60, no.694, pp.50-66, 2019 (Peer-Reviewed Journal)
- VII. **Çarpan Eş Eksenli Bir Hava Jetinde Debi Oranının Akış Karakteristikleri Üzerine Etkisinin Deneysel Olarak İncelenmesi**  
MARKAL B.  
Gümüşhane Üniversitesi Fen Bilimleri Dergisi, vol.8, no.2, pp.239-248, 2018 (Peer-Reviewed Journal)
- VIII. **Minikanallarda Doymuş Kaynamalı Akış Karakteristiklerinin Deneysel İncelenmesi**  
CANDAN A., MARKAL B., AYDIN O., AVCI M.  
Tesisat Mühendisliği, no.164, pp.29-38, 2018 (Peer-Reviewed Journal)
- IX. **Kare Kesitli Mikrokanallarda Doymuş Kaynamalı Akış Karakteristiklerinin Deneysel İncelenmesi**  
MARKAL B., AYDIN O., AVCI M.  
Tesisat Mühendisliği, vol.0, no.164, pp.19-28, 2018 (Peer-Reviewed Journal)

## **Refereed Congress / Symposium Publications in Proceedings**

- I. **EFFECTIVENESS ANALYSIS OF MINI-CHANNELED SHELL-AND-TUBE HEAT EXCHANGER**  
Yiğit M. K., Evcimen A., Markal B.  
3rd International World Energy Conference, Kayseri, Turkey, 4 - 05 December 2023, pp.241-247
- II. **INVESTIGATION OF BUBBLE BEHAVIOR IN MICROCHANNEL HEAT SINKS**  
Evcimen A., Markal B.  
AKDENİZ 10TH INTERNATIONAL CONFERENCE ON APPLIED SCIENCES, Girne, Cyprus (Kktc), 2 - 05 November 2023, pp.73-84
- III. **EFFECT OF INCLINATION ANGLE ON FLOW BOILING IN MICRO-SIZED CHANNELS**  
Markal B., Evcimen A.  
14th International Conference on Thermal Engineering: Theory and Applications, Yalova, Turkey, 25 - 27 May 2023, pp.1-3
- IV. **FOTOVOLTAİK PANELLERİN FAZ DEĞİŞTİREN MADDE DESTEKLİ ISI ALICISIYLA SOĞUTULMASI**  
YAĞCI O. K., AVCI M., AYDIN O., MARKAL B.  
15. ULUSAL TESİSAT MÜHENDİSLİĞİ KONGRESİ, İzmir, Turkey, 26 - 29 April 2023, pp.1502-1516
- V. **TRANSIENT BEHAVIOR OF NON-UNIFORM PULSATING HEAT PIPES UNDER DIFFERENT HEAT LOADS**  
MARKAL B., EVCİMEN A.  
International Symposium on Convective Heat and Mass Transfer (CONV-22), İzmir, Turkey, 5 - 10 June 2022, pp.579-587
- VI. **DOLUM ORANININ ÜNİFORM OLMAYAN KESİTE SAHİP ATIMLI ISI BORUSUNUN ÇALIŞMA PERFORMANSI ÜZERİNDEKİ ETKİSİ**  
CANDAN CANDERE A., MARKAL B., AVCI M., AYDIN O.

ULIBTK'21 Uluslararası Katılımlı 23. Isı Bilimi ve Tekniği Kongresi, Gaziantep, Turkey, 8 - 10 September 2021, vol.2, pp.1797-1805

VII. **A Promising Cooling Device for Electronics in Vehicles: Pulsating Heat Pipes**

MARKAL B., VAROL R.

INTERNATIONAL SYMPOSIUM ON AUTOMOTIVE SCIENCE AND TECHNOLOGY (ISASTECH 2021), Ankara, Turkey, 8 - 10 September 2021, vol.2, pp.1-8

VIII. **EXPERIMENTAL INVESTIGATION OF THE PULSATING HEAT PIPES HAVING LARGER FLOW SECTIONS IN THE EVAPORATOR REGION**

CANDAN CANDERE A., MARKAL B., AYDIN O., AVCI M.

5th International Anatolian Energy Symposium (AES 2021), Trabzon, Turkey, 24 - 25 March 2021, pp.630-636

IX. **A REVIEW OF THE EFFECTS OF MICRO FIN GEOMETRY AND ALIGNMENT ON FLOW BOILING CHARACTERISTICS IN MICROCHANNEL HEAT SINKS**

MARKAL B., KUL B.

5th International Anatolian Energy Symposium (AES 2021), Trabzon, Turkey, 24 - 25 March 2021, pp.92-101

X. **Effect of Filling Ratio on Thermal Performance of a Non-uniform Pulsating Heat Pipe**

MARKAL B., VAROL R.

International Conference on Energy, Environment and Storage of Energy (ICEESEN 2020), Kayseri, Turkey, 19 - 21 November 2020, pp.206-213

XI. **Effect of Mixing Ratio of Binary Mixtures on Heat Transfer Characteristics of a Pulsating Heat Pipe**

MARKAL B., VAROL R.

International 2nd Conference on Sustainable Energy and Energy Calculations (ICSEEC2020), İstanbul, Turkey, 4 - 05 September 2020, pp.53-62

XII. **HEAT TRANSFER BEHAVIOR OF COAXIAL IMPINGING JETS: AN EXPERIMENTAL STUDY**

MARKAL B., AYDIN O.

22nd Congress on Thermal Science and Technology, Kocaeli, Turkey, 11 - 14 September 2019

XIII. **Konutlarda Yağmur Suyu Potansiyelinden Faydalanma**

VAROL R., MARKAL B.

4th INTERNATIONAL ENERGY ENGINEERING CONGRESS 2019 (UEMK 2019), Gaziantep, Turkey, 24 - 25 October 2019, pp.1109-1117

XIV. **A FLOW DYNAMIC INVESTIGATION OF JET IMPINGEMENT WITH SWIRLING COAXIAL FORM**

MARKAL B.

The International Conference on Materials Science, Mechanical and Automotive Engineering and Technology (IMSMATEC'19), Nevşehir, Turkey, 21 - 23 June 2019, pp.451-456

XV. **The Effect of Jet Impingement on the Performance of a Photovoltaic Module**

MARKAL B., VAROL R.

3rd International Symposium on Innovative Approaches in Scientific Studies, Ankara, Turkey, 19 - 21 April 2019, pp.647-650

XVI. **Dönmeli Eş Eksenli Çarpan Jetlerde Isı Transferinin Deneysel İncelenmesi**

MARKAL B., AYDIN O.

14. Ulusal Tesisat Mühendisliği Kongresi, İzmir, Turkey, 17 - 20 April 2019, pp.793-801

XVII. **Thermal Characteristics of Swirling Coaxial Confined Impinging Air Jets: An Experimental Investigation**

MARKAL B.

2nd International Symposium on Innovative Approaches in Scientific Studies, Samsun, Turkey, 30 November - 02 December 2018, vol.3, pp.66-71

XVIII. **Flow Characteristics of Swirling Coaxial Impinging Air Jets: An Experimental Investigation**

MARKAL B.

1. INTERNATIONAL TECHNOLOGICAL SCIENCES AND DESIGN SYMPOSIUM, Giresun, Turkey, 27 - 29 June 2018, pp.782-795

XIX. **EXPERIMENTAL INVESTIGATION OF THE EFFECT OF FILLING RATIO AND INCLINATION ANGLE ON THE HEAT PIPE PERFORMANCE**

MARKAL B., AKSOY K.

III. ULUSLARARASI MESLEKİ VE TEKNİK BİLİMLER KONGRESİ, Gaziantep, Turkey, 21 - 22 June 2018, vol.1, pp.284-291

- XX. **KESİTİ T-ŞEKLİNDE OLAN TEK BİR MİNİ KANALDA DOYMUŞ KAYNAMALI AKIŞ KARAKTERİSTİKLERİNİN DENEYSEL İNCELENMESİ**  
MARKAL B., CANDAN A., AYDIN O.  
4. Uluslararası Katılımlı Anadolu Enerji Sempozyumu (AES 2018), Edirne, Turkey, 18 - 20 April 2018, pp.561-572
- XXI. **Effects of Flowrate Ratio and Nozzle-to-plate Distance on the Hydrodynamic Characteristics of Impinging Coaxial Jets**  
MARKAL B.  
7th International Conference on Advanced Technologies (ICAT'18), Antalya, Turkey, 28 April - 01 May 2018, pp.832-839
- XXII. **Yenilikçi Soğutma Teknolojileri: Isı Boruları**  
MARKAL B., AKSOY K.  
1st International Symposium on Innovative Approaches in Scientific Studies (ISAS 2018), Antalya, Turkey, 11 - 13 April 2018, vol.2, pp.336-342
- XXIII. **Flow Boiling Characteristics in a Single Rectangular Minichannel**  
MARKAL B., CANDAN A., AYDIN O., AVCI M.  
8th International Advanced Technologies Symposium (IATS'17), Elazığ, Turkey, 19 - 22 October 2017, pp.2075-2081
- XXIV. **MİKRO BOYUTLU DİKDÖRTGENSEL KANALLARDA KAYNAMALI AKIŞIN DENEYSEL İNCELENMESİ**  
Markal B., Aydın O., Avcı M.  
VIII. ULUSAL HİDROLİK PNÖMATİK KONGRESİ, İzmir, Turkey, 22 - 25 November 2017, pp.491-498
- XXV. **Kare kesitli mini bir kanal içerisinde kaynamalı akışın deneysel incelenmesi**  
CANDAN A., AVCI M., MARKAL B., AYDIN O.  
21. Ulusal Isı Bilimi ve Tekniği Kongresi, Çorum, Turkey, 13 - 16 September 2017, pp.313-321
- XXVI. **An Experimental Investigation of Saturated Flow Boiling Characteristics in Square Microchannels**  
Markal B., Aydın O., Avcı M.  
13. Ulusal Tesisat Mühendisliği Kongresi, İzmir, Turkey, 19 - 22 April 2017, pp.1433-1442
- XXVII. **Minikanallarda Doymuş Kaynamalı Akış Karakteristiklerinin Deneysel İncelenmesi**  
CANDAN A., MARKAL B., AYDIN O., AVCI M.  
13. Ulusal Tesisat Mühendisliği Kongresi, İzmir, Turkey, 19 - 22 April 2017, vol.2, pp.1483-1494
- XXVIII. **Paralel mikro kanallı ısı alıcıda kaynamalı akış karakteristiklerinin deneysel olarak incelenmesi**  
MARKAL B., AYDIN O., AVCI M.  
ULIBTK'15 20. Ulusal Isı Bilimi ve Tekniği Kongresi, Balıkesir, Turkey, 2 - 05 September 2015, pp.85-95
- XXIX. **Ortam sıcaklığı ve yalıtımın Ranque-Hilsch vorteks tüpü performansı üzerindeki etkisinin deneysel olarak incelenmesi**  
MARKAL B., AYDIN O., AVCI M.  
ULIBTK'13 19. Ulusal Isı Bilimi ve Tekniği Kongresi, Samsun, Turkey, 9 - 12 September 2013, pp.905-910

## Supported Projects

Yağcı O. K., Markal B., Aydın O., TUBITAK Project, Cooling of Photovoltaic Panels Via Air and PCM Based Systems, 2021 - 2023

Markal B., Avcı M., TUBITAK Project, Kademeli Genişleyen Akış Kesitine Sahip Mikro Pim Tipi Kanatçıklı Isı Alıcılarda Kaynamalı Akışın Deneysel İncelenmesi, 2020 - 2023

Markal B., Avcı M., TUBITAK Project, Değişken Kanal Genişliğine Sahip Düz Plakalı Kapalı Döngülü Atımlı Isı Borularının Deneysel İncelenmesi, 2018 - 2020

Aydın O., Avcı M., TUBITAK Project, Mikrokanal Akışlarında Kaynamada Isı Transferi ve Sistem Parametrelerinin Deneysel olarak İncelenmesi, 2013 - 2016

## **Patent**

Markal B., Giydirme tip eksantrik namlu soğutucusu, Patent, CHAPTER F Mechanical engineering; Lighting; Heating; Weaponry; Destroyed Materials, The Invention Registration Number: 2021 012781 , Standard Registration, 2023

Markal B., Avcı M., Aydın O., Düz plakalı atımlı ısı borusu, Patent, CHAPTER F Mechanical engineering; Lighting; Heating; Weaponry; Destroyed Materials, The Invention Registration Number: 2017 23286 , Standard Registration, 2020

## **Metrics**

Publication: 72

Citation (WoS): 745

Citation (Scopus): 822

H-Index (WoS): 21

H-Index (Scopus): 21

## **Non Academic Experience**

Public Corporation, KÜLTÜR VE TURİZM BAKANLIĞI, TRABZON RÖLÖVE VE ANITLAR MÜDÜRLÜĞÜ  
TRABZON RÖLÖVE VE ANITLAR MÜDÜRLÜĞÜ