23/03/16

CURRICULUM VITAE, Haustein Herman D., Ph.D.

NAME	011926557 Ph.D. Haustein Herman D.
FACULTY/DEPT	Engineering/ School of Mechanical Engineering (0)3 6406515
HOME ADDRESS	HaShaked 29b, Givat Ada, 37808 (0)77 5100390
DATE AND PLACE OF BIRTH	03.03.1977, South Africa
DATE OF ARRIVAL IN ISRAEL	18.12.1980, South Africa
ZAHAL (ISRAELI) MILITARY SERVICE	26/07/1995 - 23/07/1998 (Paratroopers – infantry)
MARITAL STATUS	Married
NO **OF CHILDREN**	Four

A. EDUCATON:

4 years (03/2000 – 07/2004)	Technion IIT, Haifa, Israel Mechanical Engineering – focused on Design and Energy Bachelor of Science (Cumma Sum Laude) 12/2004
Title of Master's Thesis	Investigation of Bubbly Flow Creation by Phase-change for Application in Marine Ramjet Engine – converted to direct doctorate 07/2007
Names of supervisors	Prof. A. Gany
Title of Doctoral Dissertation	Investigation of Bubbly Flow Creation by Phase-change for Application in Marine Ramjet Engine – Direct doctorate
Names of Supervisors	Prof. A. Gany and Prof. E. Elias

C. ACADEMIC AND PROFESSIONAL EXPERIENCE

ACADEMIC EXPERIENCE:

5 years (10/2004 - 09/2009)	Technion IIT, Haifa, Israel
	Creative intro. to Mech. Eng., Experimental methods 1, Fluid Mechanics 1, Thermodynamics 1, Heat Transfer 1
	Mechanical Engineering
	Adjunct Staff/Lab & Teaching assistant (M. Sc./Ph.D. studies)
4.5 years (10/2009 – 3/2014)	RWTH- Aachen University, Aachen, Germany
	Heat & Mass Transfer (joint graduate and undergraduate)
	Mechanical Engineering
	Adjunct Staff/ Teaching assistant (Post-Doctoral position)
2 years (3/2014 –)	Tel-Aviv University, Tel-Aviv, Israel
	Propulsion (Rocket & Jet), Thermal design of Electronic Equipment, Boundary layers (graduate course)
	School of Mechanical Engineering
	Senior Lecturer

D. ACTIVE PARTICIPATION IN SCIENTIFIC MEETINGS

2008 Session chair, 9th Biennial European ASME Conference - ESDA, Haifa, Israel

2010-2015: Papers reviewer, various Heat Transfer Conferences (IHTC 2010, ASME Summer HT Conf. 2013, IHTC 2014)

2015: Track chair (Heat Transfer), 33rd Israeli Mechanical Engineering Conference, Tel Aviv, Israel

2015: Session chair, 9th Boiling and Condensation Conference, University of Colorado, Boulder, CO, USA

2015: Session chair, 11th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT2015), Kruger National Park, South-Africa

2015-2016: Organizing committee, 34th Israeli Mechanical Engineering Conference, Tel Aviv, Israel

Invited talks:

12.06.2010 *"Rapid Boiling of Two-phase Droplets Ascending in an Immiscible Liquid - Flow, Boiling curve and Propulsion Application"*, Faculty of Aerospace Eng., Technion, Haifa Israel

28.10.2010 "*A Universal Empirical Model for Single Bubble Growth and Departure, within the Nucleate Boiling Regime"*, Faculty of Mech. Eng., Technion, Haifa Israel

05.01.2012 "*Direct local convective heat transfer coefficient measurement in a visibly-transparent setup for steady and transient jet-impingement cooling"*, Dpt. of Mech. Engineering, Ben-Gurion University, Beer-Sheva, Israel

09.01.2012, *High sensitivity IR thermal measurements for establishment of the heat transfer coefficient in impinging jets*, Department of Mechanical Engineering, Tel – Aviv University, Tel-Aviv, Israel

02.05.2012, *Frequency Response of Quasi-2D Waves on Falling Films and Their Effect on Heat Transfer,* School of Mech. Eng., Tel Aviv University, Tel Aviv, Israel

18.06.2012 "*Methods for Enhancement of Single-Phase Cooling by Impinging Liquid Jets"*, Faculty of Mech. Eng., Technion, Haifa Israel

21.06.2012 "*Evolution and Stability of Waves on Falling Films of Water"*, Dpt. of Mech. Engineering, Ben-Gurion University, Beer-Sheva, Israel

2012-2013 "*Particle kinetics of char gasification in a micro fluidized bed*" 1st -3rd HVI Gastech workshop, Karlsruhe Institute of Tech., Juelich Institute of Tech.,Clausthal Technical University, Clausthal, Germany

28.03. 2013, "*Enhancement of Multi-scale Cooling Methods through Deeper Understanding of Physical Mechanisms: Falling Films, Nucleate Boiling and Impinging Jets",* General Electric Global Research Center, Niskayuna, NY, USA

13.2.2015, "*Prediction of Nucleate boiling – is it even possible?",* Open-day lecture, Tel Aviv University, Tel Aviv, Israel

19.5.2015 *"From Generalization to Specialization, from Multidisciplinary to Similarity, or what we do when we get stuck",* Scholarship ceremony lecture, Tel Aviv University, Tel Aviv, Israel

23.8.2015 *"Cooling of Future High-Power Electronics",* Presentation at Israeli Ministry of Defense Research, Tel Aviv, Israel

E. ACADEMIC AND PROFESSIONAL AWARDS

E.1.2 EXTERNAL GRANTS

YEAR	FOUNDATION	TITLE	SUM	CO-RESEARCHERS	P.I.
2010-2011	JARA Umbrella German-Israeli Cooperation	HPC6: Modelling of Phase Transfer and Waviness for Simulation, in Evaporating Falling Film	13,000 EUR (travel + setup)	Prof. A. Oron, Mech. Eng., Technion	H.D. Haustein/ A. Oron
2015-2017	US department of Defence (DARPA)	Pulsating Micro Jets for Direct Chip Cooling	~250,000USD/year	S. Krylov (TAU), G. Ziskind (BGU, coordinator) Y. Peles & M. Amitay (RPI)	H.D. Haustein (TAU)

E.4 Prizes

2006: Jacob's prize for excellence in research, Technion

2004: Dean of Students prize for starting graduates, Technion

F. MEMBERSHIP IN PROFESSIONAL SOCIETIES

2007 - American Society of Mechanical Engineers – **ASME, (USA)**

Journal reviewer:

2012- : ASME Journal of Heat Transfer

2011- : Multiple journals: Int. J. of Heat and Mass Trans., Chemical Engineering Science, Int. J. of Heat and Fluid flow, Fuel, Measurement, Applied Energy, Heat Transfer Engineering, European J. of Mechanics B/Fluids, Energies, etc.

G. DOCTORAL STUDENTS SUPERVISED

M.Sc. Students with thesis

2015 – Elad Weinberg

Microelectronics cooling with submerged micro- jet array
Tel-Aviv University

2015 – Ron Harnik

Modelling of Heat transfer under a single free-surface jet
Tel-Aviv University

2015 – Amir Gorodesky

Pulsed impinging jets for microchip cooling enhancement
Tel-Aviv University

2014 – Stas Shalev

Novel direct heat flux measurement using Multispectral IR camera
Tel-Aviv University

2011 – 2012 Gerrit Tebruegge

Hydrodynamics and heat transfer in falling water films:
"A new falling film system and experimental investigation of the hydrodynamics of watery falling films" (in German)
RWTH-Aachen University/ WSA dept.

M.Sc. Students without thesis (adjunct supervisor)

2014 – 2015 Eduard Itschakov
Heat Transfer Design in Thermoelectric System Based on Vapor Chambers
Tel-Aviv University/ Double Check Thermal Sol. (with Dr. Alex Gurevich)

2015 – Alex Detochka

Design and optimization of heat transfer and energy storage in thermo-electric cooling system

Tel-Aviv University/ Double Check Thermal Sol. (with Dr. Alex Gurevich)

SCIENTIFIC PUBLICATIONS

B.1. ORIGINAL ARTICLES

B.1. Articles Published

1. H. D. Haustein, A. Gany, E. Elias

   Rapid Boiling of a Two-Phase Droplet in an Immiscible Liquid at High Superheat

   ASME J. of Heat Transfer, **131**, issue12, 121010, 7 pages, 2009 (Impact Factor: 1.45, Q1, GS – 6 citations, ISI – 1 citation)

2. W. Rohlfs, G.F. Dietze, H. D Haustein, R. Kneer

   Two-Phase Simulations of Electrohydrodynamics Using a Volume of Fluids Approach: A Comment

   J. of Computational physics, **231**, Issue 12, pp. 4454-4463, 2012 (Impact factor: 2.310, Q1, GS – 6 citations, ISI – 4 citations)

3. W. Rohlfs, G.F. Dietze, H. D Haustein, Tsvelodub, O. Y., R. Kneer

   Experimental Investigations of 3-dimensional Wavy Liquid Films under the Influence of Electrostatic Forces

   Experiments in Fluids, **53**, Issue 4, pp.1045-1056, 2012 (Impact factor: 1.735, Q1, GS – 7 citations, ISI – 6 citations)

4. H. D. Haustein, G. Tebruegge, W. Rohlfs, R. Kneer

   Local Heat Transfer Coefficient Measurement through a Visibly-Transparent Heater under Jet-Impingement Cooling

   International J. of Heat and Mass transfer, **55,** Issues 23-24, pp. 6410-6424, 2012 (Impact Factor: 2.407, Q1, GS – 15 citations, ISI – 9 citations)

5. W. Rohlfs, H. D. Haustein, O. Garbrecht, R. Kneer

   Insights into the Local Heat Transfer of a Submerged Impinging Jet: Influence of Local Flow Acceleration and Vortex-Wall Interaction

   International J. of Heat and Mass transfer, **55**, Issues 25–26, pp.7728-7736, 2012 (Impact Factor: 2.407, Q1, GS – 21 citations, ISI – 8 citations)

6. W. Rohlfs, G.F. Dietze, H. D Haustein, R. Kneer

Experimental Investigation of 3-Dimensional Wavy Liquid Films under the Coupled Influence of Thermo-Capillary and Electrostatic Forces

European Physical Journal – Special Topics, **219**, pp. 111-119, 2013 (Impact Factor: 1.562, Q1/Q2, GS – 1 citation, ISI – 1 citation)

7. H. D Haustein, A. Gany, G.F Dietze, E. Elias, R. Kneer
   The Dynamics of Bubble Growth at High Superheat: Boiling in an Infinite Medium and on a Wall
   ASME J. of Heat Transfer, **135**, Issue7, 071501, 2013 (Impact Factor: 2.055, Q1, GS – 2 citations)

8. W. Rohlfs, C. Ehrenpreis, H. D Haustein, R. Kneer

   Influence of viscous flow relaxation time on self-similarity in free-surface jet impingement

   International J. of Heat and Mass transfer, **78**, pp.435-446, 2014 (Impact Factor: 2.52, Q1, GS – 2 citations, ISI – 1 citation)

9. H. D. Haustein, B. Gövert, T. Kreitzberg, A. Massmeyer, R. Kneer
   Establishment of Kinetic Parameters of Particle Reaction from a Well-Stirred Fluidized Bed Reactor

   Fuel, **158**, pp. 263–269, 2015 (Impact Factor: 3.406, Q1, GS – 2 citations, ISI – 1 citation)

10. A. Mueller, H. D. Haustein, P. Stoesser, T. Kreitzberg, R. Kneer, T. Kolb

    Gasification Kinetics of Biomass-and Fossil-Based Fuels: Comparison Study Using Fluidized Bed and Thermogravimetric Analysis

    Energy & Fuels., 29(10), 6717-6723, 2015 (Impact Factor: 2.79, Q1, GS – 1 citation)

11. T. Kreitzberg, H. D. Haustein, B. Gövert, R. Kneer

    Investigation of gasification reaction of pulverized char under N2/CO2 atmosphere in a small-scale fluidized bed reactor

    ASME J. Energy Resource Tech., 138(4):042207,1-7, 2016 (Impact Factor: 1.89, Q1)

B.2. Articles in preparation

12. H. D. Haustein

    Universal RCD model for single bubble growth and departure in nucleate boiling

    Final draft, to be submitted within the coming month to *International J. of Heat and Mass transfer*

13. H. D. Haustein, R. Harnik*, W. Rohlfs,
    First-order model for stagnation-zone Heat transfer under free-surface jet impingement, including Influence of nozzle length, flow rate, surface tension and nozzle-plate distance

    To be submitted in two months to *International J. of Heat and Mass transfer*

14. H. D. Haustein

    Liquid film thickness and the location of the hydraulic jump for free-surface jet impingement

    To be submitted in three months to *Physics of fluids*

15. H. D. Haustein, T. Bar-Kohany

    Simulating viscosity by a moving boundary: an inviscid solution for flow separation location on a sphere

    To be submitted in four months to *Journal of Fluid Mechanics*

D.1. INVITED PAPERS IN SCIENTIFIC MEETINGS

1. R. Kneer, H. D Haustein, C. Ehrenpreis, W. Rohlfs,

   Flow Structures and Heat Transfer in Submerged and Free Laminar Jets

   15th International Heat Transfer Conference (IHTC), Keynote KN28 (IHTC15-8378), Kyoto, Japan, July 2014

2. H. D Haustein,

   Multiphase Dynamics in Rapid Vaporization of an Immiscible Droplet Rising in a Water Column – from Equilibrium to Explosive Boiling

   Invited talk, Droplet Dynamics workshop, *EMN Meeting on Droplets 2016*, San Sebastian, Spain, 9 - 13, May 2016

D.2. PAPERS PRESENTED AT SCIENTIFIC MEETINGS & PUBLISHED AS PROCEEDINGS

1. H. D. Haustein , A. Gany

   Rapid Boiling of a Droplet, at Partial-Superheat

ASME-JSME Summer Heat Transfer Conf., Vancouver, Canada, July 2007

2. H. D. Haustein, A. Gany, E. Elias

   Experimental Parametric Study of Droplet Rapid Boiling in Immiscible Liquid

   9th biennial European ASME conference ESDA, Haifa, Israel, July 2008

3. H. D. Haustein , G.F. Dietze, R. Kneer

   A New Empirical Model for Bubble Growth: Boiling in an Infinite Medium and on a Wall at High Superheat

   AJTEC (ASME-JSME) Summer Heat Transfer Conf., Honolulu, Hawaii, March 2011

4. H. D. Haustein , A. Gany, E. Elias

   Study of Two-Phase Underwater Ramjet Propulsor Employing Liquefied Gas Boiling

   Second International Symposium on Marine Propulsors, Hamburg, June 15-17, 2011

5. W. Rohlfs, H. D Haustein (Presentation preparation), G.F. Dietze, R. Kneer

   Experimental and Numerical Investigations of Falling Liquid Films Influenced by the Presence of Electric Fields

   6th International Berlin Workshop of Transport Phenomena with Moving Boundaries, Berlin, Germany, 24-25 November, 2011, http://www.inprompt.tu-berlin.de/?id=338

6. H. D. Haustein , G. Tebruegge, W. Rohlfs, R. Kneer

   Experimental Investigation of the Evolution and Stability of Excited Two-Dimensional Wavy Falling Films of Water

   International Fluid Dynamics and Processes - 6th Conference of the International Marangoni Association (IMA6), Haifa, Israel, 18-21 June, 2012

7. H. D. Haustein, W. Rohlfs, F. Al-Sibai, R. Kneer

   Evaluation of the Sensitivity and Response of IR Thermography from a Transparent Heater in the Case of liquid Jet Impingement

   6th European Thermal Sciences Conference – Eurotherm, Poitiers-Futuroscope, France, September 04-07, in: *Journal of Physics: Conference Series*, Vol. 395, 2012

8. H. D. Haustein (Poster presentation), B. Goevert, D. Christ, M. Habermehl, O. Hatzfeld, R. Kneer

   Small Scale Fluidized Bed Reactor for Investigation of Particle Reaction Rates: Char Combustion and the Boudouard Reaction

   (Paper No. 2825594), *6th European Combustion Meeting (ECM 2013),* Malmoe, Sweden, 25-28 June, 2013

9. H. D. Haustein, W. Rohlfs, F. Al-Sibai, R. Kneer

   Development of Heat Transfer in a Two-Dimensional Wavy Falling Film of Water and its Influence on Wave Stability

   (Paper HT2013-17453), *ASME Summer Heat Transfer Conference*, Minneapolis, MN, USA, July 14-19, 2013

10. H. D. Haustein, J. Joerg, W. Rohlfs, R. Kneer,

    Influence of micro-scale aspects and jet-to-jet interaction on free-surface liquid jet impingement for micro-jet array cooling.

    IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm), (pp. 904-911). May 2014.

11. W. Rohlfs, C. Ehrenpreis, H. D. Haustein, O. Garbrecht, R. Kneer,

    Influence of local flow acceleration on the heat transfer of submerged and free-surface jet impingement

    15th International Heat Transfer Conference, IHTC-15, July 2014, Kyoto, Japan

12. H.D. Haustein

    RCD Boiling Model: Single Bubble Growth and Departure, Under Microgravity and High Pressure

    9th Biannual Boiling & Condensation Conf., Boulder, CO, USA, 26-30 April 2015

13. H.D. Haustein

    Modular Prediction of Heat Transfer under Free-Jets: Single Jet, Jet Array, and the Influence of Gravity

    11th Int. Conf. on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT2015), 20-23 July, 2015, Kruger National Park, South-Africa

14. W. Rohlfs, J. Jörg, C. Ehrenpreis, M. Rietz, H. D. Haustein, R. Kneer

    Flow structures and heat transfer in submerged laminar jet impingement

    1st Thermal and Fluids Engineering Summer Conference, TFESC-1, August 9-12, 2015, New York City, NY, USA

15. H.D. Haustein

    Modular Prediction of Flow and Heat Transfer in Free-Surface Jet Arrays: Inter-Jet Liquid Extraction and its Influence on the Hydraulic Jump Location

    Paper HT2016-7400 (accepted), *ASME Summer Heat Transfer Conference*, Washington D.C., MD, USA, July 10-14, 2016

16. R. Harnik*, H.D. Haustein

First-order Model of Free-Jet Hydrodynamic Evolution for Heat Transfer Prediction, Including Nozzle and Flow Rate Effects

Paper HT2016-7388 (accepted), *ASME Summer Heat Transfer Conference*, Washington D.C., MD, USA, July 10-14, 2016

17. A. Gorodesky*, H.D. Haustein

Vortex Laden Flows In A Micro-gap For Enhanced Direct Chip Cooling

ICNMM2016-8047 (accepted), *ASME International Conference on Nanochannels, Microchannels and Minichannels*, Washington D.C., MD, USA, July 10-14, 2016