

Curriculum Vitae

Name: Prof.dr.Volker Hessel
Date of birth: December 28, 1964
Address: University of Adelaide; Faculty of Engineering, Computer and Mathematical Sciences (ECMS)
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Professional Career

2019 – present Research Director of the Andy Thomas Centre for Space Resources (ATCSR)
2019 – present Part-time professor University of Warwick/UK
2018 – 2022 Deputy Dean (Research) and Full professor “Sustain. Chem. Proc.”; The University of Adelaide/AU
2011 – 2018 Full professor “Micro Flow Chemistry & Process Technology”; TU/e
2012 – present Guest professor of Kunming University of Science and Technology, China
2009 – present Honorary professor of Technical Chemistry; Technical University of Darmstadt, Germany (TUD)
2007 – 2011 Director R&D Chemical Micro & Milli Process Technologies, Institut für Mikrotechnik Mainz (IMM)
2005 – 2011 Professor of Micro Process Engineering; Eindhoven University of Technology (TU/e)/NL
2002 – 2007 Vice Director R&D and Head of Chemical Process Technology Department, IMM
1999 – 2002 Head of Microreaction Technology Department, IMM
1996 – 1999 Group Leader Microreaction Technology, IMM
1994 – 1996 Scientific Employee, IMM, Mainz/DE

Academic Training & Education

1990 – 1993 PhD; Chemistry, Johannes-Gutenberg University of Mainz
1989 – 1990 Master (Diplom); Chemistry, Johannes-Gutenberg University of Mainz
1988 Pre-degree (Vordiplom); Chemistry, Johannes-Gutenberg University of Mainz
1985 – 1989 Studies in Chemistry, Johannes-Gutenberg University of Mainz
1984 High-school diploma, Tilemannschule, Limburg

Present and Recent Professional Duties

- Program Lead in ARC Centre of Excellence “Plants for Space”, \$35M
- CI in ARC Discovery Grant “Liquid Marbles for Chemical Synthesis”, \$570K
- CI and Co-CI in Government Grants (IDTC), with industrial partners \$290K
- Co-CI in three funded LIEF (ARC) Grants, totally ca. \$25M
- Principal Investigator of EU ERC SYNERGY Project SCOPE (4 partners; \$16.2M total funding)
- Coordinator of FET OPEN EU Project ONE-FLOW (9 partners; \$6.4M total funding)
- Co-Initiator of Large-Scale EU Project BIOGO (15 partners; \$14.6M; \$3.2M industry)
- Co-Initiator of Large-Scale EU Project MAPSYN (12 partners; \$11.3M total funding; \$3.2M industry)
- Coordinator of Large-Scale EU Project COPIRIDE (16 partners; \$17.8M total funding; \$8.3M industry)
- Coordinator of Large-Scale EU Project POLYCAT (19 partners; \$11.3M total funding; \$3.2M industry)
- Authority in the 35-man teamed Parliament Enquete Commission "Future of the Chemistry" in Nordrhein-Westfalia
- Steering board member of NIOK, Dutch Catalyst Society
- Science Advisory Board for the GSK-Singapore Partnership for Green and Sustainable Manufacturing, run by Glaxo-Smith-Kline (GSK) and Singapore Economic Development Board (EDB); at present 18 projects
- Scientific Proposer of Research Cluster “Novel Process Windows” (7 projects) at Deutsche Bundesstiftung Umwelt (DBU)
- Editor-in-Chief “Green Processing & Synthesis”, deGruyter; Specialty Chief Editor “Frontiers in Chemical Engineering”, Specialty Chief Editor “Frontiers in Space Technologies”; ARC Assessor; EU Project and EU ERC Grant Evaluator
- Lead Author of Book “Novel Process Windows”, Wiley-VCH, Editor of “Handbook on Micro Process Engineering”, Wiley-VCH, and Editor of Teaching Book “Flow Chemistry”, deGruyter
- Fellow in Cluster of Excellence “Smart Interfaces”, Technische Hochschule Darmstadt 2010-2013
- Organiser & Chair & Member Scientific Committee, Int. Conference on Microreaction Technology (IMRET)
- Member of the Dutch TopSector Chemistry Commission “Nanotechnology and Chemical Devices”

Awards, Grants, and Honorable Memberships

2021 Finalist “Scientist of the Year” and “Engineer of the Year” for Australian Space Awards

- 2020 Finalist “Scientist of the Year” for Australian Space Awards
- 2020 Nominee for 2020 Clunies Ross Award, in the category “Innovation”
- 2020 Nominee for Prime Ministers Prizes for Science, in the category “Innovation”
- 2017 European Research Council Synergy Grant “SCOPE”
- 2017 European Research Council Proof of Concept Grant “PICASCO”
- 2016 FET OPEN Grant European Research Council “ONE-FLOW” (€ 3.9 Mio total)
- 2016 IUPAC ThalesNano Flow Chemistry Award
- 2014 Chemical Engineering Science Award “Top Cited Paper 2011 and 2012”
- 2012 Bioorganic and Medicinal Chemistry Award “Top 25 Cited Author 2010 – 2011”
- 2011 Advanced Research Grant of the European Research Council “Novel Process Windows” (€ 2.5 Mio total)
- 2007 AIChE Award “Excellence in Process Development Research”
- 2007 Chemical Engineering Science Award “Most Cited Paper 2003 – 2006”
- 2006 Patent Award „Erfinderpreis 2006“ of State Rhineland-Palatinate for IMM patent "Trennschichtmischer".
- 2004 Member of the Editorial Boards of “Catalysis Today”, “Chem Eng J”, “Chem Eng Technol”, “ChemBioEng Reviews”, “Processes”, “Recent Patents Chem Eng”, “Current Org Chem”, “J Flow Chem”, “React Chem Eng”, “Fluidics”, “Inventions”, “Organ Chip”

Memberships Professional Organizations

Royal Australian Chemical Institute (RACI), DECHEMA Gesellschaft für Chemische Technik und Biotechnologie e.V.; NIOK-Steering-Board, Dutch Catalyst Society; ISPT, Institute for Sustainable Process Technology; Dutch Representative in the Working Party Chemical Reaction Engineering (EFCE WP CRE).

Present and Recent Research Groups at IMM, TU/e, and UoA

- UoA – 2018: 3.5 fte: 1 full professor; 5 post-docs; 15 PhD; 12 masters and other students
- TUE – in 2016: 25.3 fte: 1 full professor; 1 part-time professor; 2 assistant professors; 1 part-time professor; 1 editorial assistant, 1 secretary; 1 technician; 3 post-docs; 14 PhD; (8 masters)
- IMM – 2007-2011: average 35 fte: 2 department heads; 8 research assistants; 10 techn. assistants; 5 technicians; 2 post-docs; 10 PhD; 1 master

Scientific Output and Impact: Web of Science (March 2023)

Source: Scopus/Web of Science/GoogleScholar

- Number of publications in major peer-reviewed scientific journals: 619
- h-index: 85 (GoogleScholar); 74 (Scopus); i10-index: 356
- Total: 32,452 citations; Average number of citations per item: 54 *Source: GoogleScholar*
- Within last 10 years: 142 in the past 10 years including, 14 Plenaries, 57 Keynotes, 56 Invited, i.e. > 14 Orals pa.
- Lifetime income: about \$42M+ direct research funding with additional \$13M+ from industrial contract research

Patents and IP licenses, and commercial outcomes

- 18 patents with 43 nationalisations; Valorisation: (i) contract research with corporate giant companies, resulting in joint patents (Clariant, UOP, BP; Total: about \$7.3M). (ii) Sales of microfluidic products of the IMM catalogue: about \$0.5M/year, total (2000-2011): about \$6.0M.

Publications, Books, Journals, and Media Releases

Publications

- Micromixers - A review on passive and active mixing principles, Hessel, V., Löwe, H., Schönfeld, F., Chem. Eng. Sci. 60, 8-9, (2005) 2479-2501 (1697 citations).
- Chemistry in Microstructured Reactors, Jähnisch, K., Hessel, V., Löwe, H., Baerns, M., Angew. Chem. Int. Ed. 43, 4 (2004) 406-446 (1523 citations).
- Characterization of mixing in micromixers by a test reaction: Single mixing units and mixer arrays, Ehrfeld, W., Golbig, K., Hessel, V., Löwe, H., Richter, T., Ind. Eng. Chem. Res. 38, 3 (1999) 1075-1082 (513 citations).
- Editor of the **Book** “In-Space Manufacturing and Resourcing” (Wiley-VCH); launched in August 2022.
- Editor-in-Chief of the **Journal Section** “Sustainable Space and Planetary Resources”, Frontiers, in preparation.
- 85 **Web Releases** in 5 languages and 11 countries in about 24 months
- 2 **TV Broadcasts** (SBS, Evening News & 7News). The first included SA’s Premier, Hon Steven Marshall, the latter the Education Minister of Education, Hon John Gardner (2019).
- 3 **Newspaper Articles** in the Advertiser, Adelaide’s largest newspaper.