

# 第5回CIRP JAPAN WEB講演会

●日時 : 2024年7月11日(木) 17時00分-19時15分

●開催方法 : ZOOM(WEB講演会)

## ●スケジュール

17:00 - 17:05 一般社団法人 CIRP JAPAN 代表理事挨拶

17:05 - 18:00 Dr.-Ing. Benjamin Bergmann (Leibniz University Hannover)  
講演題目: On the Art of Sustainable Metal Cutting

18:00 - 18:05 休憩

18:05 - 19:00 Professor Julian Allwood (University of Cambridge)  
講演題目: Demand-side innovation for climate mitigation

19:00 - 19:15 連絡・情報交換等



## Dr.-Ing. Benjamin Bergmann

### 1) General information

Name: Bergmann, Benjamin, Dr.-Ing.

Date of birth: January 11, 1985

Gender: male

Family: married, 2 children

Institute address: Institute of Production Engineering and  
Machine Tools (IFW)

Leibniz Universität Hannover

An der Universität 2

30823 Garbsen

Phone: 0511-762-2563

E-Mail: bergmann@ifw.uni-hannover.de

Position: Head of Department

### 2) Academic education with degree

2017 Doctorate, Mechanical Engineering, Leibniz Universität Hannover, Prof. B. Denkena (grade excellent)

2005 - 2011 Dipl.-Ing., Mechanical Engineering, Leibniz Universität Hannover, Prof. B. Denkena

### 3) Professional career since final academic degree

10/2021 Head of Department Manufacturing Processes at IFW, Leibniz Universität Hannover

2017 - 09/2021 Head of Department Machine and Controls at IFW, Leibniz Universität Hannover

2015 - 2016 Head of Group Cutting Technology at IFW, Leibniz Universität Hannover

2011 - 2015 Research Assistant at Institute of Production Engineering and Machine Tools (IFW), Leibniz Universität Hannover

### 4) Miscellaneous

#### Prize and awards

2019 Taylor-Medal (outstanding young researcher award) International Academy for Production Engineering (CIRP)

2018 Hirschvogel Prize for outstanding PhD thesis, best doctorate in mechanical engineering of Leibniz Universität Hannover

### 5) Memberships

since 2023 International Academy for Production Engineering (CIRP)  
Associate Member

since 2019 International Academy for Production Engineering (CIRP)  
Research Affiliate

since 2017 Member of the European Society for Precision Engineering and Nanotechnology (euspen)

Third-party funding since 2022	Modeling of the cooling effect during tool grinding under consideration of process-related uncertainties, Subproject of SPP 2231, projectnumber 439916647, 228.423,00 €
since 2021	Chemical mechanisms in machining titanium, Subproject of CRC 1368, projectnumber 394563137, 197.400,00 €
since 2019	Machine technology for the productive machining of hybrid components, Subproject of CRC 1153, projectnumber 252662854, 190.450,00 €

a) *Publications with scientific quality assurance*

- 1 Bergmann, B., & Dzierzawa, P. (2022). Understanding the properties of bronze-bonded diamond grinding wheels on process behaviour. *CIRP Annals*, 71(1), 293-296. <https://doi.org/10.1016/j.cirp.2022.04.014>
- 2 Bergmann, B., & Reimer, S. (2021). Online adaption of milling parameters for a stable and productive process. *CIRP Annals*, 70(1), 341-344. <https://doi.org/10.1016/j.cirp.2021.04.086>
- 3 Bergmann, B., Denkena, B., Beblein, S., & Picker, T. (2021). FE-Simulation based design of wear-optimized cutting edge roundings. *Journal of Manufacturing and Materials Processing*, 5(4), 126. <https://doi.org/10.3390/jmmp5040126>
- 4 Bergmann, B., & Witt, M. (2020). Feeling machine for material-specific machining. *CIRP Annals*, 69(1), 353-356. <https://doi.org/10.1016/j.cirp.2020.04.102>
- 5 Bergmann, B., Denkena, B., Grove, T., & Picker, T. (2019). Chip formation of rounded cutting edges. *International Journal of Precision Engineering and Manufacturing*, 20(1), 37-44. <https://doi.org/10.1007/s12541-019-00020-4>
- 6 Mori, K., Bergmann, B., Kono, D., Denkena, B., & Matsubara, A. (2019). Energy efficiency improvement of machine tool spindle cooling system with on–off control. *CIRP Journal of Manufacturing Science and Technology*, 25, 14-21. <https://doi.org/10.1016/j.cirpj.2019.04.003>
- 7 Bergmann, B., & Grove, T. (2018). Basic principles for the design of cutting edge roundings. *CIRP Annals*, 67(1), 73-78. <https://doi.org/10.1016/j.cirp.2018.04.019>
- 8 Bergmann, B. (2017): Grundlagen zur Auslegung von Schneidkantenverrundungen. Doctoral thesis, Leibniz Universität Hannover.
- 9 Skordaris, G., Bouzakis, K. D., Kotsanis, T., Charalampous, P., Bouzakis, E., Breidenstein, B., & Denkena, B. (2017). Effect of PVD film's residual stresses on their mechanical properties, brittleness, adhesion and cutting performance of coated tools. *CIRP Journal of Manufacturing Science and Technology*, 18, 145-151. <https://doi.org/10.1016/j.cirpj.2016.11.003>
- 10 Denkena, B., Köhler, J., & Bergmann, B. (2015). Development of cutting edge geometries for hard milling operations. *CIRP Journal of Manufacturing Science and Technology*, 8, 43-52. <https://doi.org/10.1016/j.cirpj.2014.10.002>



Professor Julian Allwood FEng

Julian Allwood is Professor of Engineering and the Environment at the University of Cambridge and directs the Use Less Group. Uniquely, his research aims to articulate a pathway to zero emissions based on technologies that already exist at scale. This directs attention to eliminating process emissions and efficient electrification. A particular focus of his research is to identify opportunities for business growth compatible with real zero emissions. In 2022 this has led to founding three spin-out companies, including the world's first zero-emissions process for producing Portland cement, with a pipeline of other opportunities in development.

From 2019-24 he is director of UK FIRES – a £5m industry and multi-university programme aiming to explore all aspects of Industrial Strategy compatible with delivering zero emissions by 2050. 'Absolute Zero', the first publication of UK FIRES continues to attract widespread attention including a full debate in the House of Lords in Feb 2020, and has led to a string of other reports, research and impact.

Julian was a Lead Author of the 5<sup>th</sup> Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) with a focus on mitigating industrial emissions. He is an Honorary Fellow of the Institution of Materials, Minerals and Mining, a Fellow of the International Academy of Production Engineering (CIRP) and served as chairman of its metal forming section. He is a member of the UK's Energy Research Partnership and for ten years was joint editor-in-chief of the Journal of Materials Processing Technology. He was elected as a Fellow of the Royal Academy of Engineering in 2017 and in 2021 was awarded the triennial Japan Society for Technology of Plasticity International Prize for Research and Development in Precision Forging the highest honour for research in metal forming.

Julian's career began with 10 years work for Alcoa on flat rolling, before academic positions at Imperial College and Cambridge. From 2009-13 he held an EPSRC Leadership Fellowship, to explore Material Efficiency as a climate mitigation strategy – delivering material services with less new material. This led to publication in 2012 of the book "Sustainable Materials: with both eyes open" which can be read online at [www.withbotheyesopen.com](http://www.withbotheyesopen.com) and was listed by Bill Gates as "one of the best six books I read in 2015."

*October 2023*