

Curriculum Vitae for Tejs Vegge

Personal Profile

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Prof. Tejs Vegge has been an innovator of clean energy materials for >20 years, working on accelerating the clean energy materials discovery and innovation process. He is an internationally leading expert in the field of advanced battery materials, electrocatalysis and next-generation clean energy storage solutions. He leads the large-scale and long-term Danish National Research Foundation Pioneer Center initiative “CAPeX: Pioneer Center for Accelerating P2X Materials Discovery”, and the Battery Interface Genome–Materials Acceleration Platform (BIG-MAP) project in Battery 2030+. His approaches are fundamental in nature, but maintain a clear focus on commercial viability. ORCID: [0000-0002-1484-0284](https://orcid.org/0000-0002-1484-0284); >15.500 citations; *h*-index = 56; *h*5-index = 42 (GS).



Professional and Academic Background

2013-: Professor and Head of Section, DTU Energy, Technical University of Denmark (DTU)

2016-17: August-Wilhelm Scheer Visiting Professor, Technical University of Munich (TUM)

2012: Visiting Professor, SUNCAT@SLAC National Accelerator Laboratory, Stanford University, USA

2012-’13: Associate Professor and Head of Section, DTU Energy Conversion, DTU

2004-’11: Senior Researcher and Group Leader, Materials Research Division, Risø DTU

2001-’04: “Innovation Postdoc” at Danfoss Corporate Ventures A/S and DTU Physics

1993-’01: MSc (06-07-1998) and PhD (03-12-2001) in Applied Physics from DTU

Primary Research Areas

- Accelerated computational, experimental and AI-based discovery of clean energy materials
- Autonomous discovery of electrode and electrolyte materials for next-generation batteries
- Materials for electrochemical production of hydrogen, sustainable fuels and chemical
- Nanoparticle electrocatalysts for sustainable production of synthetic fuels and chemicals

Main Research Projects (last 10 years)

2023-2036: Danish National Research Foundation – Pioneer Center “**CAPeX**: Pioneer Center for Accelerating P2X Materials Discovery” (PI). 300 MDKK

2021-2024: Independent Research Fund Denmark - Green Transition. DFF-3 “**DELIGHT**: DEep Learning Green cHemical CaTalysis” (PI). 12.0 MDKK

2020-2023: H2020-LC-BAT-12 “**BIG-MAP**: Battery Interface Genome – Materials Acceleration Platform” (PI). 150 MDKK (Share: 20 Mkr) and H2020-LC-BAT-15 “**Battery2030Plus**” (co-PI).

2020-2022: Novo Nordisk Fonden “**SURE**: Self-correcting Unsupervised Reaction Energies” (PI). 5.0 MDKK and H2020-EIC-FETPROACT “**AMAPOLA**: A Marketable Polymer based AI-S battery”.

2019-2023: H2020-LC-BAT-3 “**SONAR**: Modelling for the search for new active materials for redox flow batteries” and H2020-NMBP-ST-2019 “**ARENHA**: Advanced materials and Reactors for Energy storage tHrough Ammonia” (co-PI). Share: 4.5 MDKK

2019-2020: FET Proactive “**Battery 2030+**: A large-scale initiative on future battery technologies” (co-PI).

2018-2022: Special Competence Initiative “**AiMade**: Autonomous Materials Discovery” (PI). 8.5 MDKK

2018-2022: H2020-FETPROACT “**E-Magic**: European Magnesium Interactive Battery Community” (co-PI) and H2020-MSCA-ITN-2018 (ETN) – “**BIKE**: Bimetallic catalyst knowledge based development for energy applications” (co-PI). Share: 2.2 MDKK

2018-2020: H2020-FET “**SALBAGE**: Sulfur-Aluminium Battery with Advanced Polymeric Gel Electrolytes”.

2017-2020: Innovation Fund Denmark “**ORBATS**: Organic Redox Flow Battery Systems”. Share: 1.8 MDKK; Eurostars “**SIMBA**: Commercial Multi-Scale SIMulation tool for BAttery Research and Development”.

- 2016-2019:** H2020 FET Open – “**LiRichFCC:** A new class of powerful materials for electrochemical energy storage: Lithium-rich oxyfluorides with cubic dense packing” (co-PI). Share: 5.5 MDKK
- 2016-2024:** The Villum Foundations – “**V-Sustain:** The Villum Center for the Science of Sustainable Fuels and Chemicals” (co-PI). 150 MDKK (Share: 20 Mkr).
- 2015-2018:** H2020 NMP 13 – “**ZAS:** Zinc Air Secondary innovative nanotech based batteries for efficient energy storage” (Co-PI). Share: 4.2 MDKK
- 2013-2017:** FP7-Energy “**Hi-C:** Novel *in situ* and *in operando* techniques; improving rechargeable batteries and super-capacitors” (WP-leader for Computational Electrochemistry). Share: 2.0 Mkr
- 2013-2017:** EU FCH JU: “**SMARTCat:** Systematic, Material-oriented Approach using Rational design to develop break-Through Catalysts for automotive PEMFC” (Principle DTU-Investigator). Share: 2.7 MDKK
- 2012-2016:** Innovation Fund Denmark “**ReLIable:** Reversible Lithium- Air Batteries” (PI). 11.1 MDKK

Recent Awards, Appointments and Commissions of Trust

- 2022:** Appointed member to IRENA Energy Transition Connect; Appointed member of EMIRI
- 2021:** Co-founder and CSO of PhaseTree; Global Faculty Affiliate at Acceleration Consortium; Taskforce lead for digitalization of education at DTU; Member of the International Advisory Council of POLiS; member of Psi-k WG B3 "Bridging Length and Time Scales"
- 2020:** Member of Battery 2030+ Executive Board; member of Materials Cloud Executive Committee.
- 2019:** Mission Innovation Champion Award; Pregl Colloquium Lecturer at NIC, Solvenia; Appointed to the Danish Government's Commission on Green Transportation; DTU Ørsted Board; 3rd Round ERC Synergy.
- 2018:** Member of The European Materials Modelling Council (EMMC)
- 2017:** PhD Supervisor of the Year, DTU (unsolicited, 25.000 DKK); Mission Innovation International Expert: Clean Energy Materials IC6; Consulting Professor, Dalian Institute of Chemical Physics (DICP), China
- 2016:** US-EU Frontiers of Engineering Fellow; Honorary Fellow of the Technical University of Munich, Institute for Advanced Study; Member of Icelandic Research Fund Panel on Physical Sciences and Math.
- 2015:** Ellen and Hans Hermer's Honorary Award (unsolicited, 100.000 DKK); Corrit Foundation Academic Travel Award (unsolicited, 10.000 DKK).
- 2014:** Elected to the Danish Academy of Technical Sciences (ATV); Board of the Danish Battery Society.

Teaching and Supervision

I currently supervise 8 Postdocs and 10 PhD students and have previously supervised >30 postdocs, 29 PhDs (100% completion rate and 2 PhD awards) and >15 MSc projects. I teach in two BSc/MSc courses.

Inventions, IPR and Patents

DTU has sold the IPR to two of my inventions in the fields of “New hydrogen detection methods” and “New hydrogen storage materials”, respectively.

Research Management

Danish Rectors' Conference Education in Research Management, RMC, from Copenhagen Business School (2006-2007) and DTU's Leadership Program (2013-2014). Among other things, I have organized or co-organized >10 international PhD Summer Schools, Workshops and Symposia.

Reviewing and Assessment Activities

I review grant proposals for a range of international research agencies and foundations, as well as papers for multiple journals, e.g., Nature (Materials/Chemistry/Energy/Catal/...), Chem. Rev., Energy. Environ. Sci., Angew. Chemie, JACS, ACS Catalysis, Adv. Func. Mater., and evaluate 2-3 PhD theses annually.

Publications, Presentations and Dissemination

I have published 205 scientific papers including >70 in high impact journals, e.g., Chem. Rev., Energy Environ. Sci., Nature Catalysis, Nature Commun., Joule, JACS, Angew. Chemie, Adv. Energy Mater., Adv. Func. Mater, Adv. Sci., Energy Storage Mater., ACS Catalysis, npj comp mater, Chem. Sci., PRL, etc. I have given >100 invited talks at international conferences/workshops, and dissemination actively on Twitter.