K. Van Geem (**ERC consolidator in 2019 and advanced in 2024**) is a world leading expert in electrification and chemical recycling of plastic waste. His research domain can be considered as "chemical reaction engineering" with a focus on modelling and design of large-scale industrial processes listed in Stanford's top 2% scientist list. He has a broad expertise covering detailed kinetic modelling, process simulation and scale-up, advanced characterization of complex materials and reactor hydrodynamics, computational chemistry, and the development of multiscale models for the simulation and design of chemical reactors and processes via a model-based design approach. Together with his LCT colleague, G. Stefanidis, Van Geem is also very active in the field of process intensification, in Layman terms doing more with less (e.g. various intensified and patented reactors, including plasma reactors), and is initiating disruptive research on electrification (**ERC advanced grant**), CO_2 utilization and design/optimization of industrially relevant chemical processes. He makes thorough analyses at the process, plant and overall industrial system level, based on life cycle thinking and thermodynamic principles in order to find out opportunities for improvement (techniques: Exergy Analysis: EA; Life-Cycle Analysis: LCA).

K. Van Geem's scientific output is characterized by the creative integration of interdisciplinary concepts and methods, **combining analytical chemistry, computational fluid dynamics and reaction engineering**. Prof. Van Geem also has broad expertise in sustainable production processes where he combines his knowledge of detailed kinetic modelling, process simulation and scale-up, advanced characterization of complex materials and reactor hydrodynamics, computational chemistry, and in the development of multiscale models for the simulation and design of chemical reactors and processes via a model-based design approach. He is also considered one of the **world leading researchers in the field of chemical recycling** and olefin production, giving numerous plenary and keynote presentations on recycling plastic waste.

Electrification of olefin production is the topic of K. Van Geem's **ERC advanced** grant entitled **e-CRACKER** that will start in March 2025 after his currently ongoing **ERC consolidator** grant **OPTIMA** on oxidative coupling of methane will end. **He is also involved** in **several projects on chemical recycling such as PREFER, CYCLOPS and WATCH (Catalisti-Moonshot 2021-2025)**. The PREFER project will develop an all-encompassing catalytic recycling concept of sorted plastic streams, fitting into existing refineries. This concept enables the recycling of plastics that to this day are unrecyclable, both from the P+MD waste bags and from other flows of plastic waste. PIONEERS will also build on the knowledge gained in the **MATTER (Catalisti, Scientific coordinator 2018-2021) project.** In the latter**, technical and market-based criteria** have been developed to support an optimal plastic waste management system. More specifically, the project focused on the P+ fraction (all plastics packaging waste) of the extended P+MD collection and recycling scheme. Prof. Van Geem is also the coordinator of the "Circular Plastics Network for Training" European Joint Doctorate training project **(C-PlaNeT, MSCA-ITN-EJD, partner 2020-2024)**. It brings together 15 international young PhD researchers working on the circular economy for plastics. C-PlaNeT takes a holistic and interdisciplinary approach and brings together chemical engineers, environmental engineers, polymer chemists, political scientists, economists, product designers and LCA-experts. The **North-C-Blade** project **(Energietransitiefonds, 2023-2026)** will evaluate the use of gasification technology for the recycling of decommissioned wind turbine blades. This includes proper waste/feed preparation, novel electrified reactor technology, and chlorine removal from the product so that it can be further valorised in novel material applications. A feasibility study will be performed to assess the viability of a gasification plant that can process up to 200 kta of waste including decommissioned wind turbine blades from the North Sea Region. Finally, there is also the **Electro (H2020, 2023-2026) project on plastic waste pyrolysis.** Electro aims to electrify recycling of polyolefinic waste via an electrified pyrolysis technology in combination with electrified steam cracking.

VAN GEEM Kevin (ERC consolidator grant and in 2025 ERC advanced grant holder)

Identifiers: ORCID: 0000-0003-4191-4960
Date of Birth: July 9, 1977, Nationality: Belgian
Married with Ineke Celie; two children (Kobe, Wout)
URL for web site: https://www.lct.ugent.be/
https://www.lct.ugent.be/people/kevin-m-van-geem

CURRENT AFFILIATION
- Department of Materials, Textiles and Chemical Engineering, Ghent University
- Director of the board of the Laboratory for Chemical Technology (LCT)
- Director of Centre of Sustainable Chemistry (CSC)
- I started my group after a Fulbright postdoc at MIT, and now it counts ca. 50 members: 15 postdocs, ca. 30 PhD students (including joint PhD students working also in other groups), and 6 technicians.

PREVIOUS POSITIONS (selection)

2018, 2022	Visiting Professor at Stanford (USA)
2010 – present	Professor in Thermochemical Reaction Engineering, at Ghent University; full professor since 2017
2009 – 2010	Fulbright Postdoc Researcher at Massachusetts Institute of Technology (MIT, USA)
2008 – 2009	Postdoctoral Researcher at Massachusetts Institute of Technology (MIT, USA)
2006 – 2009	FWO postdoctoral researcher, at Ghent University
2002 – 2006	IWT PhD student, at Ghent university
2001	ExxonMobil Belgium

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS
- Supervisor of **35 defended PhD theses**, since 2010 + **30 running** (incl. several joint PhD students)
- Supervision of **15 postdocs**

PLENARY AND INVITED LECTURES
Ca. 160 plenary or invited lectures at international conferences, companies or institutes (since 2002)

RESEARCH VALORIZATION
- 1 spinoff from my research group: AVGI (2015)
- Co-inventor of 6 patents, since 2020

EDITORSHIPS AND MAJOR INTERNATIONAL POSITIONS (selection)
- Editor of Fuel (IF: 6.6), Proceedings of The Combustion Institute (IF: 3.5), Fuel Communications (no impact factor yet); Referee for more than 60 journals, amongst others several high-impact journals: Chemical Reviews (IF: 40.197), Angewandte Chemie (I.F.: 13.734), Catalysis Reviews (IF: 7.500), Bioresource Technology (IF: 4.987), Progress in Energy and Combustion Science (I.F.: 29.254)
- Secretary of the Working party on Chemical Reaction Engineering (EFCE)
- Member of the Process Engineering for Sustainable Energy section of EFCE
- President of the Scientific and Organization Committee of ICCK, Cambridge, MA (USA)

ORGANIZATION OF INTERNATIONAL CONFERENCES (selection)
- 2020 & 2022: 23rd edition of the International Conference on Analytical and Applied Pyrolysis, Ghent, Belgium
- 2018: Chemreactor and MACKIE conferences, Ghent, Belgium
- 2015: International Conference on Chemical Kinetics (ICCK), Ghent, Belgium
- 2013: International Conference on Chemical Kinetics (ICCK), Sevilla, Spain

BIBLIOMETRIC DATA
(April 2024)

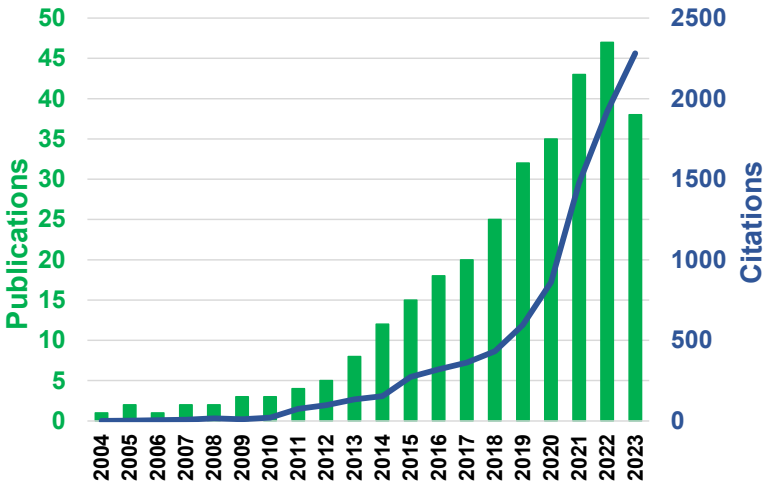
Ca. 350 peer-reviewed publications since 2002

11 invited book chapters and 2 books

4 patents and 5 patent applications

Web of Science (WoS**): h-index = 49**, Citations ca. 9,500; Most cited paper > 1340 citations

Google Scholar (GS): **h-index = 59**, Citations ca. 14,100; Most cited paper > 2240 citations



Publications list: https://biblio.ugent.be/person/F65C46C2-F0ED-11E1-A9DE-61C894A0A6B4

Most cited paper: K. Ragaert, L. Delva, K. Van Geem, Mechanical and chemical recycling of solid plastic waste, *Waste management*, **69**, 24-58 (2017): 1341 citations (WoS), 2237 citations (GS)

SUMMARY OF SCIENTIFIC OUTPUT (**5 MAJOR ACHIEVEMENTS**)

1. O. Dogu, M. Pelucchi, R. Van de Vijver, P.H.M. Van Steenberge, D.R. D'Hooge, A. Cuoci, M. Mehl, A. Frassoldati, T. Faravelli, K.M. Van Geem, The chemistry of chemical recycling of solid plastic waste via pyrolysis and gasification: State-of-the-art, challenges, and future directions, Progress in Energy and Combustion Science 84 (2021) 69. **[IF: 29.125; cited 237 WoS, 377 GS]**
2. K.M. Van Geem, V.V. Galvita, G.B. Marin, Making chemicals with electricity, Science 364 (2019) 734-735. **[IF: 56.2; cited 95 WoS, 130 GS]**
3. K.M. Van Geem, Plastic waste recycling is gaining momentum, Science (2023) 16-41. **[IF: 56.2; cited 7 WoS, 13 GS]**
4. I. Amghizar, L.A. Vandewalle, K.M. Van Geem, G.B. Marin, New Trends in Olefin Production, Engineering 3 (2017) 171-178. **[IF: 7.553; cited 512 WoS, 666 GS]**
5. K. Ragaert, L. Delva, K. Van Geem, Mechanical and chemical recycling of solid plastic waste, Waste Management. 69 (2017) 24-58. **[IF: 7.145; cited 1341 WoS, 2237 GS]**

FELLOWHSIPS and SCIENTIFIC AWARDS (Selection)

2025 – 2029 **ERC Advanced Grant** e-cracker € 2.495.000 (European Research Council/ERC)
2021 – Present Stanford top 2% of Scientist (https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/)
2022 – Present Selected by World Plastics Summit as leading professor in Chemical Recycling
2022 Listed as one of the 34 Europe's top chemistry professors (Solvay conference/CEFIC)
2019 – Present Excellence in Review Awards from Industrial & Engineering Chemistry Research
2019 – 2025 **ERC Consolidator Grant** OPTIMA € 1.995.000 (European Research Council/ERC)
2018 & 2020 Center for Turbulence research scholarship, Stanford University
2004 – 08 – 20 FWO Travel grants, Stanford University and MIT
2009 Fulbright Post-doctoral scholarship, MIT

OTHER SERVICES or RECOGNITIONS

- **Director of the Center for Sustainable Chemistry since 2016**
- **Member of Board of Directors of AVGI (spinoff of my research group, founded in 2015)**
- Chief Technology Officer of CAPTURE since 2022
- President of the working party on Chemical Reaction Engineering since 2024
- Director of the board of the Laboratory of Chemical Technology since 2019
- Senior fellow of American Institute of Chemical Engineers (AIChE)
- Member of the Board of Directors Catalisti 2019 until 2021
- Member of the commission "belangenbehartiging" Koninklijke Vlaamse Ingenieurs Vereniging (IE-NET)