

AKiss

Prof. **Anton A. KISS (Tony)**, PhD CEng CSci FICHEM | 24.06.1974

- Senior academic and industrial leadership role, with 20+ years of research and business experience across Europe and North America. An award-winning visionary leader who is performance driven and customer oriented, with an established track record in commercial innovative process and product developments.
- Internationally recognized forward-thinking scientist with expertise in process systems engineering, separation technology, process intensification, management of research, development and innovation, portfolio management, industry-academic collaborations, intellectual property and knowledge transfer.



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Professional experience

2017-Present	Professor of Chemical Engineering, Centre for Process Integration (CPI) & Research Consortium, Department of Chemical Engineering and Analytical Science (CEAS), The University of Manchester – Distinguished leadership role as <i>Royal Society Wolfson Research Merit Award</i> holder (2017-2022) – Founder and leader of the <i>Separation Science & Technology</i> research group (about 10 academics) – Coordinate & lead the <i>Design Project</i> at BEng / MEng levels (responsible for 250+ students) – Engaged in international industrial collaborations and instrumental in knowledge transfer
2014-2019	Professor of Separation Technology, Faculty of Science and Technology, University of Twente – Build bridges between applied (industrial) research and fundamental (academic) research – Lead, carry out and supervise research and graduation projects, promote educational activities
2014-2017	RD&I Specialist Senior Project Manager – AkzoNobel Supply Chain, Research & Development – Lead teams of 5-15 professionals to turn sustainable process technology into commercial success – Provided savings of millions USD to business by better process design, optimization and operation – Act as the principal expert in (reactive) separations, process design, and energy-efficient processes – Ensure development, retention and use of specialist knowledge/expertise in science & technology
2010-2014	Senior Project Leader – Separation Technology, AkzoNobel Research, Development & Innovation – Provide cost-effective solutions to complex technical problems, for all business units worldwide – Develop and maintain an external expertise network and the strategically defined position of AN – Acquire research funding from business, manage and carry out inter-disciplinary research projects
2009-2017	Invited industrial lecturer at: TU Delft, TU Eindhoven, University of Twente, and TU Dortmund
2005-2009	Project Leader – Chemical Process Technology, AkzoNobel Research & Technology Center – Carry out and supervise projects in chemical process technology and novel integrated processes – Perform industrial research and provide manufacturing support services for all Business Units
2004-2005	Postdoctoral Researcher, van 't Hoff Institute for Molecular Sciences, University of Amsterdam – NWO/STW Project: <i>Entrainer-based reactive distillation for synthesis of fatty esters (biodiesel)</i>
2004-2004	Process Systems Engineer Consultant, Foods Research Center (FRC), Unilever R&D, Vlaardingen Postdoctoral Fellow, Delft ChemTech, Faculty of Applied Sciences, Delft University of Technology – EU Project: <i>Dynamic modeling, simulation and optimization of an industrial sulfuric acid process</i>
2000-2003	Teaching Assistant (AiO) in Chemical Engineering, Faculty of Science, University of Amsterdam (UvA)
1997-2000	Teaching Assistant & Researcher, 'Babeş-Bolyai' University of Cluj-Napoca (Romania)

Education & studies

2000-2004	Ph.D. in Chemical Engineering (EQF level 8) – Faculty of Science, University of Amsterdam, NL <i>Design and control of recycle systems by non-linear analysis</i> Prof. P. D. Iedema and A. C. Dimian
1997-1998	Master of Science in Chemical Engineering (EQF level 7) – Faculty of Chemistry and Chemical Engineering, UBB Cluj-Napoca / Romania, top of the class (average grade 10.00/10)
1992-1997	Bachelor in Chemical Engineering (EQF level 6) – Faculty of Chemistry and Chemical Engineering, UBB Cluj-Napoca / Romania, top of the class with merit scholarship (average grade 9.85/10)

Other training	Leadership effectiveness <i>Technology transfer + Scientific entrepreneurship</i> PRINCE2 practitioner Behavior Based Safety <i>Positive power and influence</i> Acquisition and relationship management <i>Effective communication</i> Process modeling + Advanced distillation in Aspen Plus™ <i>Selection, synthesis and design of thermal separation processes</i> Practical distillation technology			
Languages	○ English ■■■■■■	○ Romanian ■■■■■■	○ Dutch ■■■■■□	○ Others ■■□□□

Awards & honors

- Ø Chartered Engineer (CEng), Chartered Scientist (CSci), Chartered Member & Fellow of IChemE, UK, 2018
- Ø Fellow/member of professional institutions: AIChE, IChemE, Royal Society, SCI, ESMC, EFCE, CAPE-WP, PSE-NL
- Ø ChemCon Distinguished Speaker Award for innovators and science leaders, by IChE, New Delhi, India, 2019
- Ø Royal Society Wolfson Research Merit Award for outstanding achievement, University of Manchester, 2017
- Ø Pirkey Distinguished Lecturer in Chemical Engineering, University of Texas at Austin, USA, 2017
- Ø Hoogewerff Jongerenprijs - Prestigious Dutch award for most promising young scientist, The Hague, 2013
- Ø AkzoNobel Innovation Excellence Award for most successful innovation, Amsterdam, The Netherlands, 2013
- Ø Performance Coatings Innovation Excellence Award, Deventer, The Netherlands, 2013
- Ø American Chemical Society's Petroleum Research Fund (ACS-PRF) SE Grant, Orlando, USA, 2006
- Ø Marie Curie financial support for young researchers, Lisbon, Portugal, 2004
- Ø Special Prize at the International Student Scientific Contest, Szeged, Hungary, 1996
- Ø Member of the Romanian National Chemistry Team, Romania, 1989-1992
- Ø National Chemistry Olympiads: 2nd prize (1989), 3rd prize (1990-91), and special prize (1992), Romania

Professional expertise & skills

- ü Research grants / projects: Royal Society, AkzoNobel, EU/EC, ISPT, STW, NWO (leader, coordinator, partner)
- ü Project leader (PI / Co-I) in 10+ consortium projects (total > €10m) and 100+ industrial projects (over €6m)
- ü Expert evaluator and advisor for international funding agencies (EU, EC, ACS-PFR, FWO, FCT, UEFISCDI)
- ü Consultant for industrial companies in EU countries, United Kingdom, United States, China, and India
- ü Editorial board member: *Chem. Eng. Res. Des.* (IChemE - Elsevier), *J. Chem. Technol. Biot.* (SCI - Wiley)
- ü Expert reviewer for peer-reviewed scientific journals from: ACS, Elsevier, Springer, Taylor & Francis, Wiley
- ü Guest member of the EFCE Working Party on Computer Aided Process Engineering (CAPE-WP)
- ü Board member (founder and 1st chair) of *Process Systems Engineering - The Netherlands (PSE-NL)*
- ü Chair, co-organizer, or member of scientific committees for conferences (e.g. ESCAPE-29, D&A-2018, IPIC2)

Industrial process technology

- § Smart integration of *Process Systems Engineering* with *Process Intensification* and *Separation Technology*
- § Conceptual process design, modeling and simulation, integration, revamping, control and optimization: bulk chemicals, specialty chemicals, polymers, coatings and paints, petrochemical processes, and (bio-)refineries
- § Modeling, design, control and optimization of (reactive) separations and other hybrid / integrated processes
- § Industrial applications of process intensification techniques: heat pumps, pressure exchangers, dividing-wall column, heat-integrated distillation, cyclic distillation, membrane distillation, high-gravity (HiGee) technology
- § Separation technologies: distillation, absorption, extraction, (centrifugal) phase separation, crystallization, ...
- § Downstream processing in (thermo/bio)-chemical conversion of oil/biomass to chemicals, fuels and energy.
- § Innovative technologies for integrated production of (bio)fuels, and synthesis of solid acid / base catalysts

Process simulation & programming

- ü Computer Aided Process Engineering (CAPE): *AspenTech AspenONE™* (20+ years) – *Aspen Plus, Dynamics, Custom Modeler, Energy Analyzer, HYSYS* | *ChemCAD, SimSci PRO/II, PSE gPROMS, Matlab and Simulink*
- ü Computer science applications in chemistry and chemical engineering: process modeling and simulation, process control and optimization, process synthesis and development, data acquisition and processing

Teaching & supervision

- § Project supervisor of many MEng, MSc, PhD and PostDoc (graduation) projects + PhD committee member
- § Design project coordinator and supervisor of groups of 6-7 students, 3rd yr: BEng & MEng (UK, 2017-2020)
UoM entry won the IChemE *Macnab-Lacey Prize* for the best student design project (2019)
- § Process integration & intensification lectures given as part of various courses, MSc & PEng (NL, 2009-2017)
- § Advanced process integration, OSPT course for PEng, organized at Dutch universities (NL, 2000-2007)
- § Design project | *Applied thermodynamics* | *Separation processes* | *Process integration*, MSc (NL, 2000-2004)
- § Integrated process design | *Modeling, control & optimization* | *Applied numerical methods* (RO, 1998-2000)

Selected publications

Summary: H-index 38 | Citations 4850+ | Publications 200+ | Books & chapters 15+ | Patents 9 | PL/Keynotes 20+

Papers in peer-reviewed scientific journals

1. Kiss A. A., Smith R., Rethinking energy use in distillation processes for a more sustainable chemical industry, *Energy*, 203, 117788, 2020. [IF=5.53]
2. Kiss A. A., Grievink J., Process Systems Engineering developments in Europe from an industrial and academic perspective, *Computers & Chemical Engineering*, 138, 106823, 2020. [IF=3.33]
3. Dimian A.C., Kiss A.A., Eco-efficient processes for biodiesel production from waste lipids, *Journal of Cleaner Production*, 239, 118073, 2019. [IF=6.39]
4. Kiss A.A., Jobson M., Gao X., Reactive distillation: Stepping up to the next level of process intensification, *Industrial & Engineering Chemistry Research*, 58, 5909-5918, 2019. [IF=3.37]
5. Li H., Meng Y., Shu C., Li X., Kiss A.A., Gao X., Innovative reactive distillation process for the sustainable synthesis of natural benzaldehyde, *ACS Sustainable Chemistry & Engineering*, 6, 14114-14124, 2018. [IF=6.97]
6. Zubeir L.F., Lacroix M.H.M., Meuldijk J., Kroon M.C., Kiss A.A., Novel pressure and temperature swing processes for CO₂ capture using low viscosity ionic liquids, *Sep. Purif. Technol.*, 204, 314-327, 2018. [IF=5.10]
7. Kiss A.A., Kattan Readi O.M., An industrial perspective on membrane distillation processes, *Journal of Chemical Technology and Biotechnology*, 93, 2047-2055, 2018. [IF=2.65]
8. Patrascu I., Bildea C.S., Kiss A.A., Eco-efficient downstream processing of biobutanol by enhanced process intensification and integration, *ACS Sustainable Chemistry & Engineering*, 6, 5452-5461, 2018. [IF=6.97]
9. Kiss A.A., Geertman R., Wierschem M., Skiborowski M., Gielen B., Jordens J., John J.J., van Gerven T., Ultrasound-assisted emerging technologies for chemical processes, *J. Chem. Technol. Biot.*, 93, 1219-1227, 2018. [IF=2.65]
10. Blahusiak M., Kiss A.A., Babic K., Kersten S.R.A., Bargeman G., Schuur B., Insights into the selection and design of fluid separation processes, *Separation and Purification Technology*, 194, 301-318, 2018. [IF=5.10]
11. Baldea M., Edgar T.F., Stanley B.L., Kiss A.A., Modular manufacturing processes: Status, challenges and opportunities, *AIChE Journal*, 63, 4262-4272, 2017. [IF=3.32]
12. de la Fuente J.F., Kiss A.A., Radoiu M.T., Stefanidis G.D., Microwave plasma emerging technologies for chemical processes, *Journal of Chemical Technology and Biotechnology*, 92, 2495-2505, 2017. [IF=3.13]
13. Cortes Garcia G.E., van der Schaaf J., Kiss A.A., A review on process intensification in HiGee distillation, *Journal of Chemical Technology and Biotechnology*, 92, 1136-1156, 2017. [IF=3.13]
14. Kiss A.A., Lange J.P., Schuur B., Brilman D.W.F., van der Ham A.G.J., Kersten S.R.A., Separation technology - Making a difference in biorefineries, *Biomass and Bioenergy*, 95, 296-309, 2016. [IF=3.21]
15. Kiss A.A., Pragt J.J., Vos H.J., Bargeman G., de Groot M.T., Novel efficient process for methanol synthesis by CO₂ hydrogenation, *Chemical Engineering Journal*, 284, 260-269, 2016. [IF=6.21]

Patents and patent applications

1. Kiss A.A., Bildea C.S., Patrut C., Process and installation for the production of dialkyl ethers, PCT/EP2015/051425, Patent No. WO/2015/113914, Priority date: 28.01.2014
2. Kiss A.A., ten Kate A.J.B., Conte E., Continuous process for the esterification of an alpha, beta-unsaturated carboxylic acid and an alcohol, PCT/EP2014/066675, Patent No. WO/2015/018773, Priority date: 6.08.2013
3. Kiss A.A., Dehydration of dilutions of compounds forming an azeotrope with water, PCT/EP2013/061335, Patent No. WO/2013/182499, Priority date: 5.06.2012
4. Kiss A.A., Process and separation column for separation of methanol, Patent No. EP-2660231, Priority: 3.05.2012
5. Pragt J.J., Jongmans M.T.G., Bargeman G., Schuur B., Aldering J.T.J., Nieuwhof M.R., Kiss A.A., de Haan A.B., Londono R.A., van Strien C.J.G., Process for separating MCA and DCA via extractive distillation using an organic solvent, PCT/EP2013/056969, Patent No. WO/2013/150042, Priority date: 6.04.2012
6. Kiss A.A., Pragt J.J., van Iersel M.M., Bargeman G., de Groot M.T., Continuous process for the preparation of methanol by hydrogenation of carbon dioxide, PCT/EP2013/056175, WO/2013/144041, Priority date: 28.03.2012
7. De Haan A.B., Kiss A.A., Oudshoorn M.L., Shah M.R., Manufacturing polyesters by reactive distillation, PCT/NL2012/050679, Patent No. WO/2013/048247, Priority date: 28.09.2011
8. Jongmans M.T.G., Pragt J.J., Bargeman G., B.Schuur, Aldering K.T.J., de Haan A.B., Nieuwhof M.R., Verwer P., Kiss A.A., ten Kate A.J.B., van Strien C.J.G., Process for separating monochloroacetic acid and dichloroacetic acid via extractive distillation, PCT/EP2012/054310, Patent No. WO/2012/175229, Priority date: 21.06.2011
9. Kiss A.A., Vos H.J., Renkema E.H., ten Kate A.J.B., Process for preparing dichlorohydrin, PCT/EP2010/059326, Patent No. WO/2011/000896, Priority date: 3.07.2009

Note: A complete list of publications is available at: www.tonykiss.com/publist.html

Textbooks & book chapters

1. Dimian A.C., Bildea C.S., Kiss A.A., *Applications in design and simulation of sustainable chemical processes*, Elsevier, ISBN 978-0-444-63876-2, 712 pages, 2019.
2. Kiss A.A., Zondervan E., Lakerveld R., Ozkan L. (Eds), *29th European Symposium on Computer Aided Chemical Engineering*, Computers and Chemical Engineering, vol. 46, Elsevier, ISBN 978-0-1281-8634-3, 1892 pages, 2019.
3. Kiss A.A., Patrascu I., Bildea C.S., *From substrate to biofuel in the acetone-butanol-ethanol process*, in A. Basile, F. Dalena (Eds), *2nd and 3rd generation of feedstocks*, Elsevier, ISBN 978-0-12-815162-4, 654 pages, 59-82, 2019.
4. Kiss A.A., Bildea C.S., *Intensified downstream processing in biofuels production (62-85)*, in A. Stankiewicz, A. Gorak (Eds), *Intensification of biobased processes*, RSC Publishing, 518 pages, 2018
5. Kiss A.A., *Process intensification for reactive distillation (143-181)*, in B-G. Rong (Ed), *Process synthesis and process intensification: Methodological approaches*, de Gruyter, 412 pages, 2017
6. Kiss A.A., Infante Ferreira C.A., *Heat pumps in chemical process industry*, CRC-Press (T&F), 422 pages, 2016
7. Kiss A.A., *Process intensification: Industrial applications (221-260)*, in Segovia-Hernandez J.G. & Bonilla-Petriciolet A. (Eds), *Process intensification in chemical engineering: Design, optimization and control*, Springer, 336 pg., 2016
8. Kiss A.A., *Process intensification technologies for biodiesel production - Reactive separation processes*, Springer Briefs in Applied Sciences and Technology, Springer, 104 pages, 2014
9. Dimian A.C., Bildea C.S., Kiss A.A., *Integrated design and simulation of chemical processes*, 2nd Ed., Elsevier, 2014
10. Kiss A.A., *Advanced distillation technologies – Design, control and applications*, John Wiley & Sons, 416 pg., 2013
11. Kiss A.A., *Azeotropic distillation (Ch 6018) | Extractive distillation (Ch 5949)*, in Reedijk J. (Ed.), Elsevier Reference Module in Chemistry, Molecular Sciences and Chemical Engineering. Waltham, MA: Elsevier, 1-Nov-2013
12. Kiss A.A., Bildea C.S., *Reactive absorption (467-484)*, in Ramaswamy S., Huang H., Ramarao B. (Eds), *Separation and purification technologies in biorefineries*, John Wiley & Sons, 622 pages, 2013
13. Kiss A.A., *Reactive distillation (251-274) | Reactive absorption (289-310)*, in Boodhoo K. and Harvey A. (Eds), *Process intensification technologies for green chemistry*, John Wiley & Sons, 424 pages, 2013

Conferences (Plenary and keynote lectures)

- ü Hydrocarbon Processing's International Refining and Petrochemical Conference, IRPC-2020, 3-4 June 2020
- ü Indian Chemical Engineering Congress, CHEMCON-2019, 15-19 December 2019, New Delhi, India
- ü 22nd Conf. Proc. Int. Model. Opt. Energy Sav. Pol. Reduction, PRES-2019, 20-23 Oct 2019, Crete, Greece
- ü 12th European Congress of Chemical Engineering, ECCE-12, 15-19 September 2019, Florence, Italy
- ü European Symposium on Computer Aided Process Engineering, ESCAPE-29, 16-19 June 2019, Eindhoven, NL
- ü Biotechnology Innovation Organization International Convention, BIO-2019, 3-6 June 2019, Philadelphia, USA
- ü Rethink Energy Conference, REC-2019, 23 March 2019, Manchester, UK
- ü Computer Aided Process Engineering Forum, CAPE Forum 2018, 15-17 November 2018, Bucharest, Romania
- ü SGVC-Seminar - Chemical Process Development Trends, SGVC-2018, 8 November 2018, Basel, Switzerland
- ü Distillation & Absorption conference, DA-2018, 16-19 September 2018, Florence, Italy
- ü PSE@ResearchDayUK event at Imperial College London, 7 September 2018, London, UK
- ü 45th Int. Conference of Slovak Society of Chemical Engineering, SSChE, 21-25 May 2018, High Tatras, Slovakia
- ü 19th Rideal Conference, UK Catalysis Hub, 26-28 March 2018, Oxfordshire, UK
- ü Renewable Resources & Biorefineries, RRB-13, 7-9 June 2017, Wroclaw, Poland
- ü Biorefinery I: Thermo-Chemical Biomass Conversion, 27 September - 2 October 2015, Chania / Crete, Greece
- ü 35th National Congress of the Mexican Academy (AMIDIQ-2014), 6-8 May 2014, Puerto Vallarta, Mexico
- ü 9th European Congress of Chemical Engineering, ECCE-9, 21-25 April 2013, The Hague, The Netherlands

References

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- Ø NOTE: More references and copies of any relevant documents can be supplied upon request.