Curriculum Vitae *September 2021*

PERSONAL INFORMATION

Family name, first name: **SUSI, Toma**

Contact: toma.susi@unvie.ac.at

Address: **Faculty of Physics, Boltzmanngasse 5, 1090 Vienna**

Date of birth: **17.1.1983**

Nationality: **Finnish**

Website: **www.mostlyphysics.net**

Researcher identifiers: **0000-0003-2513-573X** (ORCID)
C-2989-2009 (ResearcherID)

BIBLIOMETRICS

Articles/reviews:	**64/3**
First/corresponding:	**20/26**

	WoS	*Google*
Citations:	**1524**	**2247**

EDUCATION

2011 **Doctor of Science (Technology) – 15.6.2011**
Department of Applied Physics, Aalto University School of Science, Finland
Dissertation: *Nitrogen-doped single-walled carbon nanotubes* (Prof. E.I. Kauppinen)

2008 **Master of Science (Technology)**
Department of Applied Physics, Helsinki University of Technology, Finland

CURRENT POSITIONS

2021 – **Associate Professor** (tenured)
Faculty of Physics, University of Vienna, Austria

PREVIOUS POSITIONS

2019 – 2021 **Assistant Professor**
Faculty of Physics, University of Vienna, Austria

2015 – 2019 **Principal investigator**
Faculty of Physics, University of Vienna, Austria

2013 – 2015 **Postdoctoral fellow** (Prof. P. Ayala)
Faculty of Physics, University of Vienna, Austria

2011 – 2013 **Postdoctoral researcher** (Prof. E.I. Kauppinen)
Department of Applied Physics, Aalto University School of Science, Finland

2008 – 2011 **Research scientist** (Prof. E.I. Kauppinen)
Department of Applied Physics, Helsinki University of Technology, Finland

THIRD-PARTY PROJECT FUNDING

2020 – 2021 **FWF 1000 Ideas grant** (Positronium interferometry, 93 k€)
2018 – 2023 **ERC Starting Grant** (ATMEN, 1.497 M€)
2015 – 2018 **FWF Stand-alone project** (HeQuCoG, 323 k€)

OTHER GRANTS

2018 **Science Communication** grant, Wirtschaftsagentur Wien (12 k€)
2013 – 2015 **FWF Lise Meitner** postdoc grant, University of Vienna, Austria (120 k€)
2013 **Finnish Cultural Foundation** mobility grant (8 k€)
2013 **Walter Ahlström Foundation** mobility grant (19.2 k€)

MEMBERSHIPS

2019 – Austrian Physical Society & European Physical Society
2017 – **Vice-Chair 2018-2020, Board member 2017-2018**, Young Academy of Europe
2017 – Austrian Society for Electron Microscopy & European Electron Microscopy Society

COMMISSIONS OF TRUST

2020 – **Scientific advisory board**, *Open Research Europe* (European Commission)
2020 – **Editorial board**, *Scientific Data* (Springer Nature)
2020 – **Member**, *Open Science Task Force* (Initiative for Science in Europe)
2020 **Member**, *Taskforce: monitoring the effects of Plan S* (cOAlition S)
2018 – **Evaluation of funding proposals**, Croatian Science Foundation, Czech Science Foundation
2018 – **Advisory board**, *Nanotechnology* (IOP Publishing)
2015 – 2021 **Subject editor**, *Research Ideas and Outcomes* OA journal (Pensoft Publishers)
2013 **Member**, Finnish open access advisory group (FinnOA)

AWARDS

2013 **Best oral** presentation, *Heteronanocarb*, Spain & *A3 Symposium*, Japan
2012 **Thesis of the year** award 2011, *Association of Finnish Engineers and Architects*, Finland
2011 **Doctoral thesis** awarded highest grade *'pass with distinction'*

CONFERENCES AND TALKS

2008 – More than 30 oral presentations at conferences and workshops, including 10 invited talks and 3 plenary talks in countries including USA, Korea, Japan, Brazil, Australia and others.

2021 **Symposium organizer** – Microscopy Conference 2021 (MC2021), Austria
2019 – **Steering committee** – Manipulation, Automation and Robotics at Small Scales (*MARSS*)
2018 **Scientific committee** – *AVS65* "Additive manufacturing" symposium, USA
2016 **Local organizing committee** – International conference (*NT'16*, 400 pax), Austria
2013 **Head of local committee** – International conference (*NT'13*, 450 pax), Finland

MENTORING

Faculty of Physics, University of Vienna, Austria

2020 **1 MSc** student (P. Hilgert)
2019 – **2 MSc** students (G. Pötzelberger, F. Kraft)
2018 – **3 Postdocs** (Dr. A. Markevich, Dr. J. Madsen, Dr. V. Zobac)
2018 – **3 PhD** students (A. Chirita, A. Postl, M. Kaur)
2017 – 2018 **MSc** student (A. Chirita, co-supervision with Prof. J. Kotakoski)
2016 – 2019 **PhD** student (M. Tripathi, co-supervision with Prof. J. Kotakoski)
2016 – 2017 **MSc** student (D. Nosraty Alamdary, co-supervision with Prof. J. Kotakoski)

Department of Applied Physics, Aalto University School of Science, Finland

2011 – 2015 **2 PhD students** (K. Mustonen, M. Borghei; co-supervision with Prof. E.I. Kauppinen)
2010 – 2011 **2 MSc** students (J. Mali, J. Parjanne; co-supervision with Prof. E.I. Kauppinen)

TEACHING

2019 – **Lecturer** – *Scattering, Microscopy and Spectroscopy*, University of Vienna, Austria
2016 – 2018 **Lecturer** (spectroscopy) – *Spectroscopy and Microscopy*, University of Vienna, Austria
2015 **Course assistant** – *Women in Physics*, University of Vienna, Austria

PHD EVALUATION

2019 **Thesis reviewer** (J. Brndiarova, Slovak Academy of Sciences, Bratislava, Slovakia)
2019 **Thesis opponent** (V. Iakovlev & A. Tsapenko, Skoltech, Moscow, Russia)
2017 **Thesis panelist** (L.N. Glanzmann, University of the Basque Country, Spain)

PEER REVIEW

2010 – *Nature Communications*, *ACS Nano*, *Nanotechnology*, *Advanced Materials*, many more: see partial record on **Publons** (publons.com/researcher/1401408/toma-susi/peer-review/)

PATENTS

1. *European patent:* Kotakoski, J., **Susi, T.**, Meyer, J.C., *Method and Apparatus for Determination of an Isotope Concentration using a Microscope with Energetic Particles* (EP16183371, pending)

OPEN SCIENCE

1. Open data: **Susi, T.**, *Electron-beam manipulation of group V dopants in silicon*, Phaidra, (2021), doi:10.25365/phaidra.275
2. Open data: **Susi, T.**, *Si impurity manipulation in SWCNTs*, Phaidra (2019), doi:11353/10.949515
3. Open data: **Susi, T.**, *Si impurity manipulation in graphene*, Phaidra (2018), doi:10.25365/phaidra.47
4. Open data: **Susi, T.**, Hofer, C., Argentero, G., Leuthner, G.T., Pennycook, T.J., Mangler, C., Meyer, J.C. & Kotakoski, J., *Atomic resolution electron irradiation time series of isotopically labeled monolayer graphene*, figshare (2016). doi:10.6084/m9.figshare.c.3311946.v2
5. *Open grant application:* **Susi, T.**, *Heteroatom quantum corrals and nanoplasmonics in graphene* (HeQuCoG), Research Ideas and Outcomes 1: e7479 (2015). doi:10.3897/rio.1.e7479

MAIN AREAS OF RESEARCH AND ACHIEVEMENTS

My dissertation research at Aalto University in Finland was performed in a large European collaboration, spanning the topic of nitrogen doping of single-walled carbon nanotubes from mechanism studies to materials synthesis, and from spectroscopy and microscopy to thin film application studies. Already during this time I had an active role in directing my research and independently drafting my first-author manuscripts. **My doctoral dissertation received the highest grade** as well as a **national thesis award**.

In September 2013, I moved to Vienna for a two-year postdoctoral fellowship funded by the Austrian Science Fund (FWF). Besides experimental work on phosphorus doping and other aspects of nanotube research, my focus has been increasingly on **understanding and making use of electron irradiation** of graphene. I discovered that an electron beam could be used as an atomic-scale manipulation tool. In September 2015, I received funding from the FWF for a three-year project to explore this concept further.

With the help of promising preliminary results, I successfully applied for the **ERC Starting Grant** in the 2017 call. My small research team has already demonstrated the controlled electron-beam manipulation of Si impurities in graphene and single-walled carbon nanotubes, and the manipulation of P in graphene. Since March 2019, I am on **Tenure Track** at the Faculty of Physics of the University of Vienna, and was tenured in March 2021.

I joined the **Young Academy of Europe** (YAE) in 2017 and was elected to its Board in the same year. During my first year, I conducted a survey of our membership, whose results were published as a career column in Nature. In 2018, I was elected as Vice-Chair of the YAE, and re-elected in 2019. I coordinated the organization's efforts in science policy, especially around Plan S, and am its representative in the **Initiative for Science in Europe**'s (ISE) task force on open science.

TEN SELECTED PUBLICATIONS (as corresponding author, Gold/Green OA)

1. Markevich, A., Hudak, B.M., Madsen, J., Song, J., Snijders, P.C., Lupini, A.R., **Susi, T.**, *Mechanism of electron-beam manipulation of single dopant atoms in silicon*, Journal of Physical Chemistry C (2021) CC-BY. doi:10.1021/acs.jpcc.1c03549 (arXiv:2106.13643)

2. **Susi, T.**, Meyer, J.C., Kotakoski, J., *Quantifying transmission electron microscopy irradiation effects using two-dimensional materials*, Nature Review Physics 1, 397-405 (2019). doi:10.1038/s42254-019-0058-y (arXiv:1912.01877)

3. Su, C., Tripathi, M., Yan, Q.-B., Wang, Z., Zhang, Z., Hofer, C., Wang, H., Basile, L., Su, G., Dong, M., Meyer, J.C., Kotakoski, J., Kong, J., Idrobo, J.-C., **Susi, T.**, Li, J., *Engineering single-atom dynamics with electron irradiation*, Science Advances 5 (5), eaav2252 (2019) CC-BY. doi:10.1126/sciadv.aav2252 (arXiv:1803.01369)

4. Tripathi, M., Mittelberger, A., Pike, N., Mangler, C., Meyer, J. C., Verstraete, M., Kotakoski, J., **Susi, T.**, Electron-Beam Manipulation of Silicon Dopants in Graphene, Nano Letters 18 (8), 5319–5323 (2018) CC-BY. doi:10.1021/acs.nanolett.8b02406

5. Tripathi, M., Markevich, A., Böttger, R., Facsko, S., Besley, E., Kotakoski, J., **Susi, T.**, *Implanting Germanium into Graphene*, ACS Nano 12 (5), 4641-4647 (2018). doi:10.1021/acsnano.8b01191 (arXiv:1802.04660)

6. **Susi, T.**, Kepaptsoglou, D., Lin, Y.-C., Ramasse, Q., Meyer, J.C., Suenaga, K., Kotakoski, J., *Towards atomically precise manipulation of 2D nanostructures in the electron microscope*, 2D Materials 4, 042004 (2017) CC-BY. doi:10.1088/2053-1583/aa878f

7. **Susi, T.**, Hardcastle, T.P., Hofsäss, H., Mittelberger, A., Pennycook, T.J., Mangler, C., Drummond-Brydson, R., Scott, A.J., Meyer, J.C., Kotakoski, J., *Single-atom spectroscopy of phosphorus dopants implanted into graphene*. 2D Materials 4, 021013 (2017) CC-BY. doi:10.1088/2053-1583/aa5e78

8. **Susi, T.**, Hofer, C., Argentero, G., Leuthner, G.T., Pennycook, T.J., Mangler, C., Meyer, J.C. & Kotakoski, J., *Isotope analysis in the transmission electron microscope*, Nature Communications 7:13040 (2016) CC-BY, doi:10.1038/ncomms13040

9. **Susi, T.**, Kotakoski, J., Kepaptsoglou, D., Mangler, C., Lovejoy, T.C., Krivanek, O.L., Zan, R., Bangert, U., Ayala, P., Meyer, J.C., and Ramasse, Q., *Silicon–Carbon Bond Inversions Driven by 60-keV Electrons in Graphene*, Physical Review Letters 113, 115501 (2014) CC-BY. doi:10.1103/PhysRevLett.113.115501

10. **Susi, T.**, Kotakoski, J., Arenal, R., Kurasch, S., Jiang, H., Skakalova, V., Stephan, O., Krasheninnikov, A.V., Kauppinen, E.I., Kaiser, U., and Meyer, J.C., *Atomistic Description of Electron Beam Damage in Nitrogen-Doped Graphene and Single-Walled Carbon Nanotubes*, ACS Nano 6, 8837–8846 (2012). doi:10.1021/nn303944f