Dr. rer. nat. Tim Kampowski

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Plant Biomechanics Group Freiburg
Botanic Garden, University of Freiburg
Schänzlestr. 1
D-79104 Freiburg i.Br.
Germany

E-mail: tim.kampowski@biologie.uni-freiburg.de
Phone: ++49-(0)761-203-2781
Fax: ++49-(0)761-203-2880

Original Papers in Peer Reviewed Journals & Peer Reviewed Books and Book Series (*)

2020

L. Hesse, T. Kampowski, J. Leupold, S. Caliaro, T. Speck & O. Speck (2020): Comparative analyses of the self-sealing mechanisms in leaves of *Delosperma cooperi* and *Delosperma ecklonis* (Aizoaceae). *International Journal of Molecular Sciences* **21**: 5768. http://dx.doi.org/10.3390/ijms21165768

T. Kampowski, L-L. Thiemann, L. Kürner, T. Speck & S. Poppinga (2020): Exploring the attachment of the Mediterranean medicinal leech (*Hirudo verbana*) to porous substrates. *Journal of the Royal Society Interface* **17**: 20200300. http://dx.doi.org/10.1098/rsif.2020.0300

H. Kuolt, T. Kampowski, S. Poppinga, T. Speck, A. Moosavi, R. Tautenhahn, J. Weber, F. Gabriel, E. Pierri & K. Dröder (2020): Increase of energy efficiency in vacuum handling systems based on biomimetic principles. – In: Proceedings of the 12th International Fluid Power Conference (12. IFK), Volume 3. Dresden: Technische Universität Dresden. p.17-26. (doi:10.25368/2020.89)

T. Kampowski, M. Langer, G. Bold, M. Riffel, L. Ose, C. Seidler, U. Schaumann, T. Masselter, T. Speck & M. Thielen (2020): Rinse, sense, adjust, repeat: biomimetic continuous process water analysis in washing machines based on the hammerhead shark's olfaction hydrodynamics. *Advanced Intelligent Systems* **2**: 1900152. http://dx.doi.org/10.1002/aisy.201900152

2019

L.-S. Lehmann, T. Kampowski, M. Caliaro, T. Speck & O. Speck (2019): Drooping of *Gerbera* flower heads: mechanical and structural studies of a well-known phenomenon. *Biology Letters* **15**: 20190254. http://dx.doi.org/10.1098/rsbl.2019.0254

F. Esser, F.D. Scherag, S. Poppinga, A. Westermeier, M.D. Mylo, T. Kampowski, G. Bold, J. Rühe & T. Speck (2019): Adaptive biomimetic actuator systems reacting to various stimuli by and combining two biological snap-trap mechanics. In: U. Martinez-Hernandez, V. Vouloutsi, A. Mura, M. Mangan, M Asada, T.J. Prescott & P.F.M.J Verschure (eds) *Biomimetic and Biohybrid Systems.* Living Machines 2019.

Lectures in Computer Science, vol. 11556. Springer, Cham. https://doi.org/10.1007/978-3-030-24741-6_10

2018

T. Kampowski, S. Demandt, S. Poppinga & T. Speck (2018): Kinematical, structural, and mechanical adaptations to desiccation in poikilohydric *Ramonda myconi* (Gesneriaceae). *Frontiers in Plant Science* **9**: 1701. https://doi.org/10.3389/fpls.2018.01701

H. Klein, L. Hesse, M. Boljen, T. Kampowski, I. Butschek, T. Speck & O. Speck (2018): Finite element modelling of complex movements during self-sealing of ring incisions in leaves of *Delosperma cooperi*. *Journal of Theoretical Biology* **458**: 184-206. https://doi.org/10.1016/j.jtbi.2018.08.023

O. Speck, M. Schlechtendahl, F. Borm, T. Kampowski & T. Speck (2018): Humidity-dependent wound sealing in succulent leaves of *Delosperma cooperi* – An adaptation to seasonal drought stress. *Beilstein Journal of Nanotechnology* **9**: 175-186. http://dx.doi.org/10.3762/bjnano.9.20

T. Kampowski, M.D. Mylo, S. Poppinga & T. Speck (2018): How water availability influences morphological and biomechanical properties in the one-leaf plant *Monophyllaea horsfieldii*. *Royal Society Open Science* **5**: 171076. http://dx.doi.org/10.1098/rsos.171076

2017

T. Kampowski, M.D. Mylo, T. Speck & S. Poppinga (2017): On the morphometry, anatomy and water stress behaviour of the anisocotyledonous *Monophyllaea horsfieldii* (Gesneriaceae) and their eco-evolutionary significance. *Botanical Journal of the Linnean Society* **185**: 425–442. http://dx.doi.org/10.1093/botlinnean/box063

2016

S. Poppinga, T. Kampowski, A. Metzger, O. Speck & T. Speck (2016): Comparative kinematical analyses of Venus flytrap (*Dionaea muscipula*) snap traps. *Beilstein Journal of Nanotechnology* **7**: 664-674 (part of the thematic series "Biological and biomimetic materials and surfaces"). http://dx.doi.org/10.3762/bjnano.7.59

T. Kampowski, L. Eberhard, F. Gallenmüller, T. Speck & S. Poppinga (2016): Functional morphology of suction discs and attachment performance of the Mediterranean medicinal leech (*Hirudo verbana* Carena). *Journal of the Royal Society Interface* **13**: 20160096. http://dx.doi.org/10.1098/ rsif.2016.0096

2015

S. Ahlquist, T. Kampowski, O. Torghabehi, A. Menges & T. Speck (2015): Development of a digital framework for the computation of complex material and morphological behaviour of biological and technological systems. *Computer-Aided Design* **60**: 84-104. http://dx.doi.org/10.1016/j.cad.2014.01.013.

Further Conference Contributions, Poster and Oral Presentations

(*T) invited Talks, (T) Talks, (P) Poster presentation, (Uni) Talks for internal university colloquia, (Sci) Talks for scientific colloquia. Presenter is underlined when several authors are listed.

2018

(P-Sci) T. Speck, L. Eberhardt, F. Gallenmüller, S. Poppinga & T. Kampowski (2018): Leech suction in air and under water. Secure attachment on plant leaves and other (biological) surfaces. – Plant Biomechanics Conference, Montreal, Canada. *Poster* (10.-14.08.2018)

(T-Sci) T. Kampowski, M. Mylo, S. Demandt, S. Poppinga & T. Speck (2018): Herbaceous shape memory material systems: Structural and biomechanical adaptations to desiccation in the resurrection plant *Ramonda myconi*. – Plant Biomechanics Conference, Montreal, Canada. (13.08.2018)

2017

(P-Sci) T. Kampowski, L. Eberhardt, F. Gallenmüller, S. Poppinga & T. Speck (2017): Medicinal leeches suck, don't they? Investigating the functional morphology and general attachment performance of *Hirudo verbana* suction discs – Gordon Research Seminar & Conference, South Hadley, Massachusetts, USA. *Poster* (21.-27.07.2017)

2016

(P-Sci) T. Kampowski, M. Mylo, S. Demandt, S. Poppinga & T. Speck (2016): The impact of water stress on morphological and biomechanical properties of desiccation-tolerant and desiccation-intolerant Gesneriaceae – Biomimetics Congress at the City University of Applied Sciences, Bremen, Germany. (21.10.2016).

(P-Sci) T. Kampowski, L. Eberhard, F. Gallenmüller, S. Poppinga & T. Speck (2016): Medicinal leeches suck, don't they? Investigating the functional morphology and general attachment performance of *Hirudo verbana* suction discs. – Biomimetics Congress at the City University of Applied Sciences, Bremen, Germany. (21.10.2016).

(T-Sci) T. Kampowski, M. Mylo, S. Demandt, S. Poppinga & T. Speck (2016): How water availability influences morphological and biomechanical properties in desiccation-tolerant and desiccation-intolerant herbaceous plants. – Research Network 'Functional Nanostructures', Annual meeting 2016, Bad Herrenalb, Germany. (06.10.2016).

(T-Sci) T. Kampowski, M. Mylo, S. Demandt, S. Poppinga & T. Speck (2016): How water availability influences morphological and biomechanical properties in desiccation-tolerant and desiccation-intolerant herbaceous plants. – Society of Experimental Biology, Annual meeting 2016, Brighton, U.K. (06.07.2016).

2015

(T-Sci) T. Kampowski, S. Poppinga & T. Speck (2015): Self-adaptive stiffening in plants as role model for bio-inspired non-isocyanate polyurethanes (NIPUs). – 24th Colloquium of the Freiburg Materials Research Center (FMF) 2015, Schluchsee, Germany (16.10.2015).

(P-Sci) T. Kampowski, M. Mylo, S. Poppinga & T. Speck (2015): Adaptive mechanics and reinforcement in herbaceous plants. – Research Network "Functional Nanostructures", Annual meeting 2015, Bad Herrenalb, Germany (01.10.2015).

2014

(P-Sci) T. Kampowski, R. Mülhaupt, G. Reiter, O. Kraft, R. Schwaiger & T. Speck (2014): Contribution to the development of bio-inspired, multifunctional polyurethanes by analysing the structural hierarchy, adaptive mechanical properties and biocrystallisation processes of plants (GreenPUR). – Society of Experimental Biology, Annual meeting 2014, Manchester, U.K. (03.07.2014).

Published Annual Reports and Scientific Reports

2017

V. Schimpf, T. Kampowski, G. Reiter, S. Poppinga, T. Speck & R. Mülhaupt (2017): Entwicklung isocyanatfreier Polyurethan-Materialien mit adaptiven und thermisch-responsiven Eigenschaften. – In: Freiburger Materialforschungszentrum (FMF) Report 2016, 24-26. FMF, Freiburg.

V. Schimpf, T. Kampowski, G. Reiter, S. Poppinga, T. Speck & R. Mülhaupt (2017): Development of non-isocyanate polyurethane materials with adaptive and thermoresponsive features. – In: Freiburger Materialforschungszentrum (FMF) Report 2016, 26 – 27. FMF, Freiburg.

T. Kampowski, L. Eberhard, F. Gallenmüller, S. Poppinga & T. Speck (2017): Untersuchungen zur Funktionsmorphologie und zum Haftvermögen der Haftorgane des Medizinischen Blutegels (*Hirudo verbana*). – In: Kesel, A.B. & Zehren, D. (Hrsg.) Bionik: Patente aus der Natur (GTBB) Tagungsband 8. Bremer Bionik-Kongress 2016, 193 – 200. GTBB, Bremen.

T. Kampowski, M. Mylo, S. Demandt, S. Poppinga & T. Speck (2017): Der Einfluss von Wasserstress auf morphologische und mechanische Eigenschaften austrocknungstoleranter und austrocknungsintoleranten Gesneriaceen. – In: Kesel, A.B. & Zehren, D. (Hrsg.) Bionik: Patente aus der Natur (GTBB) Tagungsband 8. Bremer Bionik-Kongress 2016, 214 – 219. GTBB, Bremen.

2016

V. Schimpf, T. Kampowski, G. Reiter, S. Poppinga, T. Speck & R. Mülhaupt (2016): Entwicklung neuartiger NIPU-Netzwerke mit adaptiven und thermisch-responsiven Eigenschaften. – In: Freiburger Materialforschungszentrum (FMF) Report 2015, 21 – 23. FMF, Freiburg.

V. Schimpf, T. Kampowski, G. Reiter, S. Poppinga, T. Speck & R. Mülhaupt (2016): Development of novel NIPU networks with adaptive and thermoresponsive features. – In: Freiburger Materialforschungszentrum (FMF) Report 2015, 23 – 24. FMF, Freiburg.

2015

H. Blattmann, V. Schimpf, S. Weyand, T. Kampowski, R. Schwaiger, O. Kraft, G. Reiter, T. Speck & R. Mülhaupt (2015): Entwicklung bioinspirierter isocyanatfreier Polyurethane auf Basis nachwachsender Rohstoffe. – In: Freiburger Materialforschungszentrum (FMF) Report 2014, 42 – 45. FMF, Freiburg.

H. Blattmann, V. Schimpf, S. Weyand, T. Kampowski, R. Schwaiger, O. Kraft, G. Reiter, T. Speck & R. Mülhaupt (2015): Development of bio-inspired non-isocyanate polyurethanes based on renewable resources. – In: Freiburger Materialforschungszentrum (FMF) Report 2014, 45 – 46. FMF, Freiburg.

Patents and Invention Disclosures

(1) DE102018205502 – Sensorvorrichtung und Verfahren zur Untersuchung einer Flüssigkeit und Waschmaschine, Erfinder: Michael Riffel, Uwe Schaumann, Thomas Speck, Tim Kampowski, Marc Thielen, Georg Bold, Max Langer & Tom Masselter, Patentanmeldung: 11.04.2018, DE102018205502 / Patentoffenlegung: 17.10.2019, DE102018205502 (Anmelder: E.G.O. Elektro-Gerätebau GmbH)

Reviewing Activities

Journal of Bionic Engineering, Journal of the Royal Society Interface, Planta