

List of publications of Pierre Lambert

List fulfilling the [Guide for applicants 2022](#)'s requirements

1. Published works, as an author, a co-author or a publisher





1. **Lambert, P.**, & Mastrangeli, M. (2019). *Microscale Surface Tension and its Applications*.
2. **Lambert, P.**, et al. (2013). *Surface Tension Effects in Microsystems: Engineering Below the Capillary Length*. Springer.
3. **Lambert, P.**, & Raman, V. (2009). *Recueil d'exercices pour le cours de mécanique rationnelle*. Presses Universitaires de Bruxelles.
4. **Lambert, P.** (2007). *Capillary Forces in Microassembly*. NY: Springer.
5. **Lambert, P.** (2004). *Mécanique appliquée: Notes de cours à l'attention des étudiants de première candidature HORTA*. Presses universitaires de Bruxelles.

2. Book chapters or participation to a collective book, as an author or a co-author of the section

1. Toncheva, A., Blanc, L., **Lambert, P.**, Dubois, P., & Raquez, J.-M. (2019). Mechanically Responsive Materials for Soft Robotics. In H. Koshima (Ed.), *Chapter 11: Multi-responsive Polymer Actuators by Thermo-reversible Chemistry* (1 ed., pp. 277-306). Wiley-VCH Verlag GmbH & Co. KGaA.
2. Mastrangeli, M., & **Lambert, P.** (2013). Lateral capillary forces. In *Surface Tension in Microsystems: Engineering Below the Capillary Length* (1 ed., pp. 45-69). Springer. <https://dipot.ulb.ac.be/dspace/bitstream/2013/152633/1/MastrangeliCh3.pdf>
3. **Lambert, P.**, & Régnier, S. (2011). Microworld Modeling in Vacuum and Gaseous Environments. In *Robotic Microassembly* (pp. 1-54). Piscataway: John Wiley and Sons. doi:10.1002/9780470634417.ch1
4. **Lambert, P.**, & Régnier, S. (2011). Microworld Modeling: Impact of Liquid and Roughness. In *Robotic Microassembly* (pp. 55-105). Piscataway: John Wiley and Sons. doi:10.1002/9780470634417.ch2
5. Chau, A., Régnier, S., Delchambre, A., & **Lambert, P.** (2011). Theoretical and experimental study of the influence of AFM tip geometry and orientation on capillary force. In *Adhesion Aspects in MEMS/NEMS* (pp. 165-176). CRC Press.
6. Alvo, S., **Lambert, P.**, Gauthier, M., & Régnier, S. (2011). A van der waals force-based adhesion model for micromanipulation. In *Adhesion Aspects in MEMS/NEMS* (pp. 77-90). CRC Press.

7. Chaillet, N., Hafez, M., & **Lambert, P.** (2010). Actuators for Microrobotics. In *Microrobotics for micromanipulation* (1 ed., pp. 99-178). Wiley. doi:10.1002/9781118622810.ch2
8. Gauthier, M., **Lambert, P.**, & Régnier, S. (2010). Microhandling and Micromanipulation Strategies. In *Microrobotics for micromanipulation* (1 ed., pp. 179-242). Wiley. doi:10.1002/9781118622810.ch3
9. Gauthier, M., **Lambert, P.**, & Régnier, S. (2010). The Physics of the Microworld. In *Microrobotics for micromanipulation* (1 ed., pp. 1-98). Wiley. doi:10.1002/9781118622810.ch1
10. Agnus, J., Chaillet, N., Hafez, M., Gauthier, M., **Lambert, P.**, & Régnier, S. (2008). La microrobotique: applications à la micromanipulation. In *La physique du micromonde*.
11. Régnier, S., Chaillet, N., & **Lambert, P.** (2008). La microrobotique: applications à la micromanipulation. In *Micropréhension et stratégies de micromanipulation*. Editions Hermès.
12. **Lambert, P.**, Chaillet, N., & Hafez, M. (2008). La microrobotique: applications à la micromanipulation. In *Actionneurs pour la microrobotique*. Editions Hermès.
13. Chau, A., **Lambert, P.**, Delchambre, A., & Bouillard, P. (2003). Behaviour of Flexure Hinges for Use as Articulations in High Precision Mechanisms. In H. Knobloch & Y. Kaminorz (Eds.), *MicroNano Integration* (pp. 287-288). Postdam: Springer.(VDI-Buch). doi:10.1007/978-3-642-18727-8_42

3. Articles published in peer-review journals

1. Rigaut, C., Deruyver, L., Goole, J., Haut, B., & **Lambert, P.** (2022). Instillation of a Dry Powder in Nasal Casts: Parameters Influencing the Olfactory Deposition With Uni- and Bi-Directional Devices. *Frontiers in Medical Technology*, 4. doi:10.3389/fmedt.2022.924501
 <https://dipot.ulb.ac.be/dspace/bitstream/2013/344890/3/Rigaut2022.pdf>
2. Pinan Basualdo, F. N., Gardi, G., Wang, W., Demir, S., Bolopion, A., Gauthier, M., **Lambert, P.**, & Sitti, M. (2022). Control and Transport of Passive Particles Using Self-Organized Spinning Micro-Disks. *IEEE Robotics and Automation Letters*.
 https://dipot.ulb.ac.be/dspace/bitstream/2013/337612/3/pinan2022LRA3143306_postprint.pdf
3. Decroly, G., **Lambert, P.**, & Delchambre, A. (2021). A Soft Pneumatic Two-Degree-of-Freedom Actuator for Endoscopy. *Frontiers in robotics and AI*, 8. doi:10.3389/frobt.2021.768236
 https://dipot.ulb.ac.be/dspace/bitstream/2013/333928/1/doi_317572.pdf
4. Piñan Basualdo, F., Terrazas Mallea, R., Scheid, B., Bolopion, A., Gauthier, M., & **Lambert, P.** (2021). Effect of insoluble surfactants on a thermocapillary flow. *Physics of fluids*, 33(7), 072106. doi:10.1063/5.0055373
 https://dipot.ulb.ac.be/dspace/bitstream/2013/327876/3/2021_POF_33_072106.pdf

5. Kravtcova, A., Toncheva, A., Rantataro, S., Peltola, E., Raquez, J.-M., **Lambert, P.**, & Zhou, Q. (2021). Shape Memory Polymer-Based Insertable Electrode Array towards Minimally Invasive Subdural Implantation. *IEEE sensors journal*, 1-1. doi:10.1109/JSEN.2021.3078358
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<https://dipot.ulb.ac.be/dspace/bitstream/2013/326567/5/Kratcova2021.pdf>
6. Deruyver, L., Rigaut, C., **Lambert, P.**, Haut, B., & Goole, J. (2021). The importance of pre-formulation studies and of 3D-printed nasal casts in the success of a pharmaceutical product intended for nose-to-brain delivery. *Advanced drug delivery reviews*, 113826. doi:10.1016/j.addr.2021.113826
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<https://dipot.ulb.ac.be/dspace/bitstream/2013/325273/4/Deruyver2021.pdf>
7. Debelle, A., de Rooster, H., Bianchini, E., Lonys, L., Huberland, F., Vanhoestenbergh, A., **Lambert, P.**, Acuna Otarola, V., Smets, H., Giannotta, F., Delchambre, A., Sandersen, C., Bolen, G., Egyptien, S., Deleuze, S., Devière, J., & Nonclercq, A. (2021). Optimization and assessment of a novel gastric electrode anchoring system designed to be implanted by minimally invasive surgery. *Medical engineering & physics*, 92, 93-101. doi:10.1016/j.medengphy.2021.05.004
<https://dipot.ulb.ac.be/dspace/bitstream/2013/324276/3/1-s2.0-S1350453321000473-main.pdf>
8. Decroly, G., Raffoul, R., Deslypere, C., Leroy, P., Van Hove, L., Delchambre, A., & **Lambert, P.** (2021). Optimization of Phase-Change Material–Elastomer Composite and Integration in Kirigami-Inspired Voxel-Based Actuators. *Frontiers in robotics and AI*, 8. doi:10.3389/frobt.2021.672934
https://dipot.ulb.ac.be/dspace/bitstream/2013/323321/1/doi_306965.pdf
9. Piñan Basualdo, F., Bolopion, A., Gauthier, M., & **Lambert, P.** (2021). A microrobotic platform actuated by thermocapillary flows for manipulation at the air-water interface. *Science Robotics*, 6(52), eabd3557. doi:10.1126/scirobotics.abd3557
https://dipot.ulb.ac.be/dspace/bitstream/2013/327879/3/Franco_Science_Robotics.pdf
10. Chafaï, A., Vitry, Y., Dehaeck, S., Gallaire, F., Scheid, B., Colinet, P., & **Lambert, P.** (2021). Two-dimensional modelling of transient capillary driven damped micro-oscillations and self-alignment of objects in microassembly. *Journal of fluid mechanics*, 910, A6. doi:10.1017/jfm.2020.919
https://dipot.ulb.ac.be/dspace/bitstream/2013/319160/3/2021_JFM_910_A6.pdf
11. Blanc, L., Francois, B., Delchambre, A., & **Lambert, P.** (2020). Characterization and Modeling of Granular Jamming: Models for Mechanical Design. *Granular matter*, 23(6). doi:https://doi.org/10.1007/s10035-020-01071-5
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12. Lehmann, O., Rauch, J. Y., Vitry, Y., Pinsard, T., **Lambert, P.**, & Gauthier, M. (2020). Miniaturized robotics: The smallest camera operator bot pays tribute to David Bowie. *IEEE robotics & automation magazine*, 27(3), 10.1109/MRA.2020.2992277, 22-28. doi:10.1109/MRA.2020.2992277

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13. Iazzolino, A., Tourtit, Y., Chafaï, A., Gilet, T., **Lambert, P.**, & Tadrist, L. (2020). Pick up and release of micro-objects: A motion-free method to change the conformity of a capillary contact. *Soft matter*, 16(3), 754-763. doi:10.1039/c9sm02093d
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 14. Wang, J.-P., Francois, B., & **Lambert, P.** (2020). From Basic Particle Gradation Parameters to Water Retention Curves and Tensile Strength of Unsaturated Granular Soils. *International journal of geomechanics*, 26(6), 05020003. doi:10.1061/(ASCE)GM.1943-5622.0001677
https://dipot.ulb.ac.be/dspace/bitstream/2013/308567/3/38_Wang_et_al_ASCE_GM.pdf
 15. Forbes, B., Bommer, R., Goole, J., Hellfritzs, M., De Kruijf, W., **Lambert, P.**, Caivano, G., Regard, A., Schiaretti, F., Trenkel, M., Vecellio, L., Williams, G., Sonvico, F., & Scherließ, R. (2020). A consensus research agenda for optimising nasal drug delivery. *Expert opinion on drug delivery*, 17(2), 127-132. doi:10.1080/17425247.2020.1714589
<https://dipot.ulb.ac.be/dspace/bitstream/2013/335290/3/Forbes-EPDD2020-Proofs.pdf>
 16. Decroly, G., Mertens, B., **Lambert, P.**, & Delchambre, A. (2019). Design, characterization and optimization of a soft fluidic actuator for minimally invasive surgery. *International Journal of Computer Assisted Radiology and Surgery*. doi:10.1007/s11548-019-02081-2
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 17. Taniguchi, T., Blanc, L., Asahi, T., Koshima, H., & **Lambert, P.** (2019). Statistical Modeling of Photo-Bending Actuation of Hybrid Silicones Mixed with Azobenzene Powder. *Actuators*, 8(68).
<https://dipot.ulb.ac.be/dspace/bitstream/2013/295408/3/actuators-08-00068-v2.pdf>
 18. Taniguchi, T., Blanc, L., Asahi, T., Koshimizu, H., & **Lambert, P.** (2019). Statistical Modeling of Photo-Bending Actuation of Hybrid Silicones Mixed with Azobenzene Powder. *Actuators*, 8(68).
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 19. Tourtit, Y., Gilet, T., & **Lambert, P.** (2019). Rupture of a Liquid Bridge between a Cone and a Plane. *Langmuir*, 35(37), 11979-11985. doi:10.1021/acs.langmuir.9b01295
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 20. **Lambert, P.**, & Mastrangeli, M. (2019). Microscale surface tension and its applications. *Micromachines*, 10(8), 526. doi:10.3390/mi10080526
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 21. Wang, J.-P., Andò, E., Charrier, P., Salager, S., **Lambert, P.**, & Francois, B. (2019). Micro-scale investigation of unsaturated sand in mini-triaxial shearing using X-ray CT. *Géotechnique letters*, 9(4), 269-277. doi:10.1680/jgele.18.00214
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22. Blanc, L., Pol, A., Bertrand, F., Delchambre, A., **Lambert, P.**, & Gabrieli, F. (2019). Granular Jamming as Controllable Stiffness Mechanism for Medical Devices. *Trends in mathematics*.
https://dipot.ulb.ac.be/dspace/bitstream/2013/288549/3/blanc2018_MicroToMacro_ULB_Padova_Paper_postprint.pdf
23. Dehaeck, S., Cavaiani, M., Chafaï, A., Tourtit, Y., Vitry, Y., & **Lambert, P.** (2019). Hybrid Two-Scale Fabrication of Sub-Millimetric Capillary Grippers. *Micromachines*, 10, 224. doi:10.3390/mi10040224
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24. Innocenti, B., Larrieu, J.-C., **Lambert, P.**, & Pianigiani, S. (2019). Automatic Characterization of soft tissue material properties during mechanical tests. *Muscles, Ligaments and Tendons Journal*, 7(4), 538.
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25. Terrazas Mallea, R., De Maeijer, A., Bolopion, A., Gauthier, M., Kinnaert, M., & **Lambert, P.** (2019). Thermocapillary micromanipulation: force characterization and Cheerios interactions. *Journal of micro-bio robotics*, 15(1), 13-22. doi:10.1007/s12213-019-00117-z
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26. Gilet, T., Gernay, S., Aquilante, L., Mastrangeli, M., & **Lambert, P.** (2019). Adhesive elastocapillary force on a cantilever beam. *Soft matter*, 15(19), 3999-4007. doi:10.1039/c9sm00217k
<https://dipot.ulb.ac.be/dspace/bitstream/2013/320287/3/Gilet2019preprint.pdf>
27. Loyez, M., Larrieu, J.-C., Chevineau, S., Rimmelink, M., Leduc, D., Bondue, B., **Lambert, P.**, Devière, J., Wattiez, R., & Caucheteur, C. (2019). In situ cancer diagnosis through online plasmonics. *Biosensors & bioelectronics*, 131, 104-112. doi:10.1016/j.bios.2019.01.062
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28. Fuentes, C. C., Hatipogullari, M., Van Hoof, S., Vitry, Y., Dehaeck, S., Du Bois, V., **Lambert, P.**, Colinet, P., Seveno, D., & Van Vuure, A. W. (2019). Contact line stick-slip motion and meniscus evolution on micrometer-size wavy fibres. *Journal of colloid and interface science*, 540, 544-553. doi:10.1016/j.jcis.2019.01.045
https://dipot.ulb.ac.be/dspace/bitstream/2013/320545/3/fuentes2019_postprint.pdf
29. Wang, J.-P., **Lambert, P.**, De Kock, T., Cnudde, V., & Francois, B. (2019). Investigation of the effect of specific interfacial area on strength of unsaturated granular materials by X-ray tomography. *Acta Geotechnica*. doi:10.1007/s11440-019-00765-2
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30. Gilet, T., Heepe, L., **Lambert, P.**, Compère, P., & Gorb, S. S. (2018). Liquid secretion and setal compliance: the beetle's winning combination for a robust and reversible adhesion. *Current opinion in insect science (Online)*, 30, 19-25. doi:10.1016/j.cois.2018.08.002
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31. Toncheva, A., Khelifa, F., Paint, Y., Voué, M., **Lambert, P.**, Dubois, P., & Raquez, J.-M. (2018). Fast IR-Actuated Shape-Memory Polymers Using in Situ Silver Nanoparticle-Grafted Cellulose Nanocrystals. *ACS Applied Materials & Interfaces*, 10(35), 29933-29942. doi:10.1021/acsami.8b10159
32. Terrazas Mallea, R., Piron, D., Bolopion, A., **Lambert, P.**, & Gauthier, M. (2018). Thermocapillary convective flows generated by laser points or patterns: Comparison for the noncontact micromanipulation of particles at the interface. *IEEE Transactions on Robotics and Automation*, 3(4), 3255-3262.
33. Terrazas Mallea, R., Bolopion, A., Beugnot, J.-C., **Lambert, P.**, & Gauthier, M. (2018). Closed-loop particle motion control using laser-induced thermocapillary convective flows at the fluid/gas interface at micrometric scale. *IEEE/ASME transactions on mechatronics*. doi:10.1109/TMECH.2018.2843887
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34. Dehaeck, S., **Lambert, P.**, & Scheid, B. (2018). Adaptive Stitching for Meso-Scale Printing with Two-Photon Lithography. *Additive Manufacturing*, 21, 589-597. doi:10.1016/j.addma.2018.03.026
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35. Terrazas Mallea, R., Bolopion, A., Beugnot, J.-C., **Lambert, P.**, & Gauthier, M. (2017). 1D manipulation of a micrometer size particle actuated via thermocapillary convective flows. *Proceedings of the ... IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2017-September, 8202187, 408-413. doi:10.1109/IROS.2017.8202187
36. Compère, P., **Lambert, P.**, Gernay, S., Labousse, S., & Gilet, T. (2017). Multiscale tarsal adhesion kinematics of freely-walking dock beetles. *Journal of the Royal Society interface*.
37. Toncheva, A., Willocq, B., Khelifat, F., Douhéret, O., **Lambert, P.**, Dubois, P., & Raquez, J.-M. (2017). Bilayer solvent and vapor-triggered actuators made of cross-linked polymer architectures via Diels-Alder pathways. *Journal of materials chemistry. B*, 5(28), 5556-5563. doi:10.1039/c7tb01661a
38. Gernay, S. M., Labousse, S., **Lambert, P.**, Compère, P., & Gilet, T. (2017). Multi-scale tarsal adhesion kinematics of freely-walking dock beetles. *Journal of the Royal Society interface*, 14(136), 20170493. doi:10.1098/rsif.2017.0493
39. Innocenti, B., Larrieu, J.-C., **Lambert, P.**, & Pianigiani, S. (2017). Automatic characterization of soft tissues material properties during mechanical tests. *Muscles, Ligaments and Tendons Journal*, 7(4), 529-537.
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41. Wang, J.-P., Hu, N., Francois, B., & **Lambert, P.** (2017). Estimating Water Retention Curves and Strength Properties of Unsaturated Sandy Soils from Basic Soil Gradation Parameters. *Water resources research*, 53(7), 6069-6088. doi:10.1002/2017WR020411
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 43. Terrazas Mallea, R., Bolopion, A., Beugnot, J.-C., **Lambert, P.**, & Gauthier, M. (2017). Laser-induced thermocapillary convective flows: A new approach for non-contact actuation at microscale at the fluid/gas interface. *IEEE/ASME transactions on mechatronics*, 22(2), 693-704. doi:10.1109/TMECH.2016.2639821
 44. Munoz, E., Quispe, J., **Lambert, P.**, Bolopion, A., Terrazas Mallea, R., Régnier, S., & Vela, E. (2017). Optimizing the Speed of Single Infrared-Laser-Induced Thermocapillary Flows Micromanipulation by Using Design of Experiments. *Journal of micro-bio robotics*. doi:10.1007/s12213-017-0097-3
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 46. Mastrangeli, M., Zhou, Q., Sariola, V., & **Lambert, P.** (2017). Surface Tension-driven Self-Alignment. *Soft matter*, 13, 304-327. doi:10.1039/c6sm02078j
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 48. Hellegouarch, S., Fueyo Roza, L., Artoos, K., **Lambert, P.**, & Collette, C. (2016). Linear encoder based low frequency inertial sensor. *International Journal of Optomechatronics*, 10(3-4), 120-129. doi:10.1080/15599612.2016.1217109
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4. Articles published in conference proceedings

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5. Oral presentations during conferences, which include a review committee

1. Rigaut, C., Deruyver, L., Goole, J., Haut, B., & **Lambert, P.** (2022). *Optimisation of Nose-to-Brain Delivery for Patient with and without Septum Perforation*. Paper session presented at World Meeting on Pharmaceuticals, Biopharmaceutics and Pharmaceutical Technology (13: 28 - 31 Mars 2022: Amsterdam).
2. Robert, F., Duchateau, V., Raman, V., Boey, C., & **Lambert, P.** (2007). *Détecer les préconceptions pour corriger les représentations erronées des étudiants: application à la*

mécanique et à l'électronique. Paper session presented at 24e congrès de l'Association internationale de pédagogie universitaire (AIPU) (05-2007).

3. De Greef, A., **Lambert, P.**, & Delchambre, A. (2006). *A minimally invasive surgery actuator based on a flexible and inflatable structure*. Paper session presented at IEEE Benelux EMBS Symposium (07-08/12/2006: Bruxelles).
4. Sausse, M., **Lambert, P.**, & Delchambre, A. (2005). *Modelling of electrostatic forces for microassembly*. Paper session presented at Première journée sur la modélisation et l'analyse dimensionnelle (mai 2005: Lausanne).
5. **Lambert, P.**, & Delchambre, A. (2005). *Design Rules for a Capillary Gripper in Microassembly*. Paper session presented at International Symposium on Assembly and Task Planning (IEEE ISATP2005) (19-21/07/2005: Montréal).
6. **Lambert, P.**, & Zhou, Q. (s.d.). *Fluidic assembly and capillary forces*. Paper session presented at conférence Smart Systems Integration (10-11/03/2009).

6. Patents

1. Lenders, C., **Lambert, P.**, & Gauthier, M. (2011). *Meniscus-Supported Compliant Table*.