Liste de publications de Guillaume Haïat

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Brevet

1. **Haïat, G.**, Anagnostou, F., Mathieu, V. and Soffer, J.E. « Procédé et dispositif de contrôle ultrasonore de la tenue mécanique d'une pièce insérée dans un corps, en particulier d'un implant dentaire ». Demande n° 0958325 déposée à l'INPI le 24/11/2009. Déposé en PCT le 24/11/2010. Licence transférée à la start-up WaveImplant en 2020.
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Vulgarisation

- **Haïat, G.**, Monitoring bone healing to help improve implant success, Success story of the EU Commission, 2023. Link
- **Haïat, G.**, L'innovation de rupture au service du médical, la République du Centre, 2023

Livres et ouvrages

- Co-éditeur du livre *Bone Quantitative Ultrasound*, Springer, 1st Edition., 2011, XII, 468 p., Hardcover, SPRINGER. ISBN: 978-94-007-0016-1
- Auteur du Livre : *Imagerie ultrasonore : du contrôle non destructif à la biomécanique,* Presses Académiques Francophones, 125 p, Hardcover. 2012. ISBN 978-3-8381-7511-9

Chapitres dans des ouvrages

1. Laugier, P. and **Haïat G.** "Introduction to the physics of ultrasound", in *Bone Quantitative Ultrasound*. Springer. Chapter 2. 2011
2. **Haïat G.** "Linear ultrasonic properties of cortical bone: *in vitro* studies", in *Bone Quantitative Ultrasound*. Springer. Chapter 14. 2011
3. Hériveaux, Y, Nguyen, VH, Vayron, R and **Haiat, G** "Ultrasonic evaluation of dental implant stability" in *Dental Ultrasound in periodontology and Implantology*. Ed. Albert Chan and Oliver Kripfgans, Springer. 2020.
4. Martin, M, Pivnoka, P, **Haiat, G,** Lemaire, T, Sansalone, V "Algorithmic formulation of bone fabric evolution based on the dissipation principle: a 2D finite-element study" in *Developments and Novel Approaches in Biomechanics and Metamaterials*. Springer. 2020
5. Hériveaux, Y, Nguyen, VH and **Haiat, G** "Ultrasonic evaluation of the bone-implant interface" in *Bone QUS: new Horizons*. Eds. Pascal Laugier and Quentin Grimal, Springer. 2022.

Keynote lecture

- Vayron R., **Haiat G.**, "Ultrasound assessment of dental implant stability: finite element analysis of wave propagation" 6th International Conference on the Development of Biomedical Engineering in Vietnam, June 27-29 June 2016, Ho Chi Minh, Vietnam.
- **Haiat G.**, "Acoustical behavior of the bone-implant interface: from multiscale modeling to the patient's bed". 26th International Congress on Sound and Vibration (ICSV26) Montreal, Canada, 7-11 Juillet 2019.
- **Haiat G.**, "The bone-implant interface: multiscale modeling and applications". The International Conference on Modern Mechanics and Applications (ICOMMA 2020) Saigon, Vietnam, 2-4 Décembre 2020.

Conférences invitées

1. Laugier P., **Haiat G.**, Bossy E, Padilla F., "Finite-difference computations of ultrasound wave propagation in bone", *Third European Conference on Computational Mechanics Solids, Structures and Coupled Problems in Engineering*, actes du congrès, C.A. Mota Soares et.al. (eds.), Lisbon, Portugal, 5-8 June 2006.
2. **Haiat G.**, " Influence d'un gradient de propriétés matérielles sur la propagation d'ondes ultrasonores dans l'os cortical: application à la transmission axiale", *Workshop « Matériaux poreux, propagation d'ondes acoustiques et caractérisation »*, Valencienne, 26 février 2009.
3. **Haiat G.**, "Using acoustical modeling and numerical simulation for bone quantitative ultrasound", *2011 World Congress on Advances in Structural Engineering and Mechanics (ASEM'11^{plus})*, Seoul, Korea, 18–23 Septembre 2011.
4. Mathieu V., **Haiat G.**, "Développement d'une méthode ultrasonore pour l'estimation de l'ostéointégration d'implants dentaires", *Journées "acoustique des milieux poreux"*, Valencienne, 06-07 Juin 2011.
5. **Haiat G.**, " Estimation des propriétés biomécaniques de l'os: une approche multimodalité", *Journée scientifique de la Fédération Galileo Galilei Grenoble FR3345, "La mécanique aux interfaces avec la biologie et la santé". Vendredi 18 Novembre 2011*, Grenoble, 18 Novembre 2011.
6. **Haiat G.**, " Dispositif ultrasonore pour l'estimation de la stabilité d'un implant dentaire", *25ème déjeuner de la technologie : « Durabilité et fonctionnalisation des biomatériaux », 21/02/2012*.
7. Vayron R., **Haiat G.**, "In vitro ultrasonic assessment of the biomechanical quality of the interface surrounding a dental implant" 5th International conference on biomedical engineering in Vietnam, June 16-18 2014, Ho Chi Minh.
8. **Haiat G.**, "Multimodal determination of the biomechanical properties of the bone-implant interface" 17th U.S. National Congress on Theoretical & Applied Mechanics, June 15-20 2014, Lansing, MI, USA.
9. **Haiat G.,** "Developing healthcare technology through biomedical engineering approaches: from bench to bed", Journées Franco-Argentines, 50 ans pour la cooperation scientifique pour l'innovation, 5-6 Novembre 2014, Buenos Aires, Argentine.
10. Vayron, R., **Haïat G.,** "Assesment of the biomechanical properties of the interface surrounding a dental implant: an in vitro approach", Conferencia Latino Americano en Ingeniria Biomedica, 29/10-31/10/14, Parana, Argentina
11. Vayron, R. and **Haïat G.,** "Multimodal determination of the biomechanical properties of the bone-implant interface", Rencontres Franciliennes de Mécanique (RFM), 11-15 Mai 2015
12. **Haiat G.**, "Imagerie quantitative ultrasonore: application au rachis". Journée Scientifique du iLAB-Spine. June 4 2016. Montreal, QC.
13. Nguyen VH., Vayron R and **Haiat G.**, "Acoustical estimation of endosseous implant stability: finite element modeling and experimental validation", 5th Joint Meeting of the Acoustical Society of America and Acoustical Society of Japan, November 28- December 2 2016, Honolulu, Hawaii.
14. **Haiat G.**, "Characterization of the bone-implant interface". French-Italy Workshop Bone biomechanics: multiscale and multiphysical aspects, Guliano di Roma, Italy, 26-28 September 2017
15. **Haiat G.**, "Multiscale characterization of the biomechanical properties of the bone-implant". European Calcified Tissue Society ERC Grant webinar series, Dresden, Allemagne, 29 Novembre 2017
16. Nguyen VH., Vayron R and **Haiat G.**, "Acoustical estimation of endosseous implant stability: finite element modeling and experimental validation", 5th Joint Meeting of the Acoustical Society of America and Acoustical Society of Japan, November 28- December 2 2016, Honolulu, Hawaii.

17. Sansalone V., Martin M., **Haiat G**, Pivonka P, Lemaire T. Bone remodeling recast in the generalized continuum mechanics. Euromech Colloquium 594 Bone remodeling: multiscale mechanical models and multiphysical aspects, 15-19 May 2018, Nancy, France
18. **Haiat G** and Bosc, R. Biomechanical behavior of the bone-implant interface: from multiscale modeling to the patient's bed. 45ème congrès de la société de Biomécanique. 26-28 octobre 2020, Metz, France. Perspective Talk.
19. Nguyen, VH, Heriveaux, Y. and **Haiat G.**, "Characterization of bone-implant interfaces: some computational aspects" 6th International Conference on the Development of Biomedical Engineering in Vietnam, December 27-29 June 2022, Ho Chi Minh, Vietnam.
20. **Haiat G.**, "Quantitative ultrasound of the bone-implant interface" 2023 International Congress on Ultrasonics (ICU), September 18-21 2023, Beijing, China.
21. **Haiat G.**, "Assessing the Primary Stability of the acetabular cup and of the femoral stem by Impact Analyses: A Cadaveric Study" The 38th Annual Research Meeting of the Japanese Orthopaedic Association (JOAKISO2023), October 19-20 2023, Tsukuba, Japan.
22. **Haiat G.**, "An Impact hammer as a decision support system for surgeons during osteotomy" 20th World Congress of Non Destructive Testing (20th WCNDT), May 28-31 2023, Incheon, Korea.

Actes de congrès nationaux et internationaux

1. **Haïat G.** and Barthel E., "The adhesive contact of viscoelastic spheres", *Adhesion Society Meeting*, Actes du congrès, 25-28 février 2001, Williamsbourg, Virginia, USA.
2. Barthel E. and **Haïat G.**, "Adhérence d'aspérités viscoélastiques: un modèle minimal", *Matériau 2002*, Actes du congrès, Tours.
3. Barthel E. and **Haïat G.**, "Adhesive contact of viscoelastic spheres : a hand-waving approach", *Adhesion Society Meeting*, Actes du congrès, pp. 25-28 Février 2003, Myrtle Beach, South Carolina, USA.
4. **Haïat G.**, Calmon P. and Lasserre F., "Application of ultrasonic modeling to the positioning of defects in a cladded component", *Review of Progress in Quantitative NDE*, eds. by D. O. Thompson and D. E. Chimenti, Actes du congrès, **23**, pp. 103-109, 27 Juillet-1er août 2003, Green Bay, Wisconsin, USA, Présentation Orale.
5. **Haïat G.**, Calmon P. and Lasserre F., "Simulation helped positioning of defects in a cladded component", *5th World Congress on Ultrasonics*, Actes du congrès, pp 105-108, 7-10 Septembre 2003, Paris. Présentation Orale.
6. Padilla F., Bossy E., **Haïat G.**, Jenson F., Laugier P., "Numerical simulation of transmission and backscattering in cancellous bone.", *2005 IEEE International Ultrasonics Symposium*, 18-21 Septembre 2005, Rotherdam.
7. **Haïat G.**, Padilla F., and Laugier P., "Simulation numérique de la dépendance des paramètres ultrasonores à des variations de microarchitecture et de constantes élastiques", *8ème congrès Français d'acoustique,* 24-27 avril 2006, Tours.
8. Sasso M., Talmant M., **Haïat G.,** Laugier P., Naïli S., "Development of a multi-dimensional SVD based technique for multi-receivers ultrasound used in the bone status characterization", *Fourth IEEE Workshop on Sensor Array and Multi-channel Processing*, 12-14 juillet 2006, Waltham, USA.
9. Dencks S., Barkmann R., Padilla F., **Haïat G.**, Laugier P., Schmitz G., Glüer C. C., "Optimization algorithm for improved quantitative ultrasound signal processing at the proximal femur", *2006 IEEE International Ultrasonics Symposium*, 3-6 Octobre 2006, Vancouver, Canada.
10. Desceliers C., Grimal Q., **Haiat G.**, Naili S., Soize C., "1D-space finite element approximation with 2D-space Fourier transform and with time-domain formulation for 3D-transient elastic waves in multilayer semi-infinite media", *13th International congress on Sound and vibration*, 2-6 juillet 2006, Vienne.
11. **Haïat G.**, Barthel E., "Adhesive contact to rough viscoelastic surfaces", *30th Annual Meeting of The Adhesion Society*, 18-21 Février 2007, Tampa, FL, USA. Actes du congrès.
12. Sasso M., **Haïat G.**, Talmant M., Laugier P., Nailï S., "Multi-modal analysis in axial transmission: application of a SVD-based extraction algorithm to ultrasonic cortical bone characterization", *2007 International Congress on Ultrasonics*, 9-12 Avril 2007, Vienne, Autriche. Actes du congrès.

13. Sasso M., **Haïat G.,** Yamato Y., Naili S., Matsukawa M., "Broadband ultrasonic attenuation in bovine cortical bone: dependence on bone mass and microstructure", *2007 International Congress on Ultrasonics*, 9-12 Avril 2007, Vienne, Autriche. Actes du congrès.
14. **Haiat G.**, Padilla F. and Laugier P., "3D simulations of wave propagation in a poroelastic medium: prediction of slow and fast wave mode in human trabecular bone", *2007 International Congress on Ultrasonics*, 9-12 Avril 2007, Vienne, Autriche. Actes du congrès.
15. **Haiat G.**, Lonne S., Lhémery A., Padilla F., Laugier P. and Naili S., "Modeling the frequency dependence of phase velocity in phantoms of trabecular bone", *2007 International Congress on Ultrasonics*, 9-12 Avril 2007, Vienne, Autriche.
16. Grimal Q., Talmant M., **Haïat G.**, Naili S., Desceliers C. and Soize C. "Stochastic modeling of the interaction of acoustic waves with a solid plate of random thickness: Application to cortical bone assessment with the axial transmission technique", *2007 International Congress on Ultrasonics*, 9-12 Avril 2007, Vienne, Autriche.
17. Grimal Q., Talmant M., **Haiat G.**, Naili S., Desceliers C., Soize C., "Modeling with uncertain parameters : Application to the ultrasonic assessment of bone quality", *21st Congress of the international society of biomechanics*, 1-5 juillet 2007, Taipei. Actes du congrès.
18. Sasso M., **Haïat G.,** Yamato Y., Naili S., Matsukawa M., "Broadband Ultrasonic Attenuation in femoral bovine cortical bone is an indicator of bone properties", *2007 IEEE International Ultrasonics Symposium*, 28-31 Octobre 2007, New York, USA. Actes du congrès.
19. **Haïat G.**, Padilla F., Laugier P., "Dependence of both slow and fast wave mode properties on bone volume fraction and structural anisotropy in human trabecular bone: a 3D simulation study", *2007 IEEE International Ultrasonics Symposium*, 28-31 Octobre 2007, New York, USA.
20. **Haïat, G.**, Sasso, M., Naili, S., Matsukawa M., "Frequency dependence of ultrasonic properties of bovine cortical bone samples", *29th Symposium on UltraSonic Electronics (USE2008)*, 11-13 November 2008, Sendai, Japon.
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25. Sansalone V., Naili, S., Bousson V., Bergot, C., Peyrin, F., Laredo, J.D. and **Haïat G.** "Computing the heterogeneous anisotropic elastic properties of cortical bone by a micromechanical approach" *IV European conference on Computational mechanics*, Paris, 16-21 May 2010. Actes du congrés.
26. Fukui K., Mathieu V., Matsukawa M., Kawabe M, Vayron R, Soffer JE, Anagnostou F, and **Haiat G**., "Micro-Brillouin scattering measurements in mature and newly formed bone tissue surrounding an implant", *31th Symposium on UltraSonic Electronics (USE2010)*, 6-8 decembre 2010, Tokyo, Japon.
27. Mathieu, V.**,** Anagnostou, F., Soffer, J.E., and **Haïat, G.**, "An ultrasonic device to assess the biomechanical properties of the bone implant interface", *2010 IEEE International Ultrasonics Symposium*, 11-14 Octobre 2010, San Diego. Actes du congrés.
28. Mathieu V., Fukui K., Matsukawa M., Kawabe M, Soffer JE, Anagnostou F, and **Haiat G**., "Assessment of the biomechanical properties of newly formed bone tissue using Micro-Brillouin scattering", *2010 IEEE International Ultrasonics Symposium*, 11-14 Octobre 2010, San Diego. Actes du congrés.
29. Sansalone V., Naili S., Bousson V., Bergot C., Peyrin F., Zarka J., Laredo J.D., **Haïat G.** "Coupling a homogenization model with an imaging technique to retrieve cortical bone anisotropic biomechanical properties" The 2011 World Congress on Advances in Structural Engineering and Mechanics (ASEM11plus), Seoul, 18-22 September 2011. Actes du congrés.
30. Nguyen V.-H., Naili S., **Haiat G**. "Numerical studies of ultrasonic wave propagation in anisotropic poroelastic bones" The 2011 World Congress on Advances in Structural Engineering and Mechanics (ASEM11plus), Seoul, 18-22 September 2011. Actes du congrés.

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33. Desceliers C., Soize, C., Naili, S., **Haïat, G.** "Experimental identification of a prior tensor-valued random field for the elasticity properties of cortical bones using in vivo ultrasonic measurements", *Congrès Français d'Acoustique,* Nantes, Avril 2012, actes du congrès.
34. Vayron, R., Loriot, D., **Haïat, G.** "Ultrasonic assessment of the in vitro biomechanical stability of a dental implant", *21st International Congress on Acoustics, 165th meeting of the acoustical society of America,* Monteral, Juin 2013, actes du congrès.
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36. Mathieu, V., Chappard, C., **Haïat, G.** "Anatomical dependence of the ultrasonic velocity in human cortical bone samples", *2013 International Congress on Ultrasound,* Singapour, Mai 2013, actes du congrès.
37. Vayron R., Mathieu, V. and **Haïat G.**, "Assessing in vitro dental implant stability with a quantitative ultrasound method", colloque biennal Recherche en Imagerie et Technologies pour la Santé (RITS 2013), 8-11 Avril 2013, Bordeaux, France.
38. Vayron R., Mathieu, V. and **Haïat G.**, "Variation de la réponse ultrasonore d'un implant dentaire inclus dans un biomatériau et soumis à un chargement en fatigue", 12ème Congrès Français d'acoustique, Poitiers, 22-25 avril 2014
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