Exponent®
Engineering & Scientific Consulting

Ross Bennett-Kennett, Ph.D., P.E.

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Professional Profile

Dr. Bennett-Kennett specializes in failure analysis and failure prevention of complex engineering structures and devices. He has specific expertise in the areas of metallurgy, materials science, adhesion science and degradation.

Dr. Bennett-Kennett is a NACE Certified Coatings Inspector and regularly conducts analyses of various paint and protective-coating systems utilized in both industrial settings and consumer goods. He has consulted on several coating issues including degradation of tank liners for chemical shipping, abrasive damage to automotive coatings, delamination of both UV protective and electrically insulating coatings for utilities, and application of protective liners for food and beverage.

He also has experience investigating failures in ferrous and non-ferrous metals, ceramics, and polymers. He has expertise in a variety of materials characterization techniques including mechanical testing, optical and electron microscopy, EDS, and FTIR.

Prior to joining Exponent, Dr. Bennett-Kennett completed his Ph.D. at Stanford University in the department of Materials Science and Engineering, where his research focused on relating stresses in human skin upon drying to perceived impacts of a variety of consumer cosmetic treatments. To facilitate this research, Dr. Bennett-Kennett designed and fabricated a thin film stress measurement system for real time tracking of biaxial stresses in films exposed to a harsh external environment. Dr. Bennett-Kennett leveraged these new systems and his multidisciplinary expertise to study mechanical stresses of energy materials in situ and to create new collaborative partnerships with Stanford Medicine.

Academic Credentials & Professional Honors

Ph.D., Materials Science and Engineering, Stanford University, 2020

M.S., Materials Science and Engineering, University of California, Santa Barbara, 2015

B.S., Physics, Arizona State University, 2013

2025 Cosmetic Victories Academic Prize Finalist

National Science Foundation Graduate Research Fellowship Program Fellow, 2013-2016

Licenses and Certifications

Professional Engineer Metallurgical, California, #2059

NACE - Certified Coating Inspector Level 1 Certification

NACE - Certified Coating Inspector Level 2 Certification

NACE - Certified Coating Inspector Level 3 Certification

Professional Affiliations

Association for Materials Protection and Performance – AMPP

Patents

N. Herbots, et. al. Methods for Wafer Bonding and for Nucleating Bonding Nanophases Using Wet and Steam Pressurization, US Patent filed October 31, 2011

N. Herbots, et. al. Molecular Film Containing Polymeric Mixture for Hydrophobic Implant Surfaces US Patent filed October 31, 2011

Publications

Brooke P, Bennett-Kennett R, Gupta C, et al. Failure of coatings on wood substrates due to surface preparation and application. J Fail. Anal. and Preven. 2024. https://doi.org/10.1007/s11668-024-02090-7

Bennett-Kennett R, Pace J, Lynch B, Domanov Y, Luengo GS, Potter A, Dauskardt RH. Sensory neuron activation from topical treatments modulates the sensorial perception of human skin. PNAS Nexus 2023; 2(9).

Bryan AY, Brandon Strong E, Kidambi S, Gilligan-Steinberg S, Bennett-Kennett R, Lee JY, ... Ma MR. Biomechanical analysis of the Ross procedure in an ex vivo left heart simulator. World Journal for Pediatric and Congenital Heart Surgery 2022; 13(2):166-174.

Hendrickx-Rodriguez S, Connetable S, Lynch B, Pace J, Bennett-Kennett R, Luengo GS, ... Potter A. From decoding the perception of tightness to a clinical proof of soothing effects derived from natural ingredients in a moisturizer. International Journal of Cosmetic Science 2022.

Titan AL, Fahy E, Chen K, Foster DS, Bennett-Kennett R, Dauskardt RH, ... Longaker MT.. Proceed with caution: mouse deep digit flexor tendon injury model. Plastic and Reconstructive Surgery Global Open 2021; 9(1).

Rolston N, Bennett-Kennett R, Schelhas LT, Luther JM, Christians JA, Berry JJ, Dauskardt RH. Comment on “Light-induced lattice expansion leads to high-efficiency perovskite solar cells”. Science 2020; 368(6488):eaay8691.

Wang H, Bennett-Kennett R, Paulsen MJ, Hironaka CE, Thakore AD, Farry JM, ... Woo YJ. Multiaxial lenticular stress-strain relationship of native myocardium is preserved by infarct-induced natural heart regeneration in neonatal mice. Scientific reports 2020; 10(1):1-12.

Mias C, Maret A, Gontier E, Carrasco C, Satge C, Bessou-Touya S, ... Duplan H. Protective properties of Avène Thermal Spring Water on biomechanical, ultrastructural and clinical parameters of human skin. Journal of the European Academy of Dermatology and Venereology 2020; 34:15-20.

Wang H, Bennett-Kennett R, Paulsen MJ, Hironaka CE, Thakore AD, Farry JM, ... Woo YJ. Neonatal heart regeneration preserves native ventricular biomechanical properties after myocardial infarction. Circulation Research 2019; 125(Suppl_1):A724-A724.

Davis E, Herbots N, Whaley S, Bennett-Kennett R, Culbertson R, Causey A, ... Wilkens B. Hermetic nano-bonding\texttrademark and surface characterization for medical implants and marine and air sensors. Bulletin of the American Physical Society 2014; 59.

Bennett-Kennett R, Herbots N, Murphy A, Sell D, Kutz T, Benitez S, ... Kwong H. Modeling condensation, hydro-and pepto-affinity of surfaces in medical implant devices and surgical lenses: effect of blood proteins. In APS Four Corners Section Meeting Abstracts 2012; J1-005.

Presentations

Semenikhin N, Brooke P, Bennett-Kennett R, Lemberg J. A comparative analysis of corrosion product removal methods for ferrous fracture surfaces. IMAT 2025, Detroit, MI, 2025.

Semenikhin N, Brooke P, Bennett-Kennett R, Lemberg J, Dodaran M, Molnar J. Abnormal failures of table knives during operation. IMAT 2025, Detroit, MI, 2025.

Bennett-Kennett R, Gupta C, Guyer EP. Best practices for root cause analysis in the context of a potential dispute. AMPP Eastern Conference, Grand Rapids, Michigan, 2024.

Brooke PD, Semenikhin N, Bennett-Kennett R, Guyer EP. Pitfalls of using EDS in failure analysis. International Materials, Applications & Technologies Conference, Cleveland, Ohio, 2024.