HENRY RALPH RAWLS

Professor of Biomaterials

1. Education

Fellowship:	NIH Research Career Award, Cariology & restorative materials, 1982-1985.
Postdoctoral:	Institute of Molecular Biophysics, Florida State University, 1965
PhD:	Molecular Biophysics, Florida State University, Physical Chemistry, 1964
BS:	Louisiana State University, Chemistry, 1957

Service at UTSA: Years of Service: 13 years

Professor, Core Faculty, Joint Biomedical Engineering program, UTSA/UTHSCSA (2003-present)

Adjoint Professor, UTSA Interdisciplinary Graduate Program in Advanced Materials Engineering (MatE program) (2015–present).

2. Other Academic Experience

Prof. of Biomaterials, University of Texas Health Science Center, San Antonio (1988-present).

Asst./Assoc. Prof. of Biomaterials, La. State Univ. Med. Ctr., Dental School, New Orleans, (1976-1985).

Visiting Scientist, University of Groningen, School of Dentistry, Laboratory for Materials Science, Groningen, The Netherlands (1980).

Adjunct Asst. Professor, Tulane Univ., Dept. of Biomedical Engineering, New Orleans. (1978-1985)

Staff R&D Scientist, Oral Care Research Dept., The Gillette Co., Boston, MA (1985-1988).

3. Other Experience

Physics Department Head, Gulf South Research Institute, New Orleans, LA, (1967-1973).

Photochemistry Dept. Head, Unilever NV, Central Research Lab., The Netherlands. (1965-1967)

Chemist, E.I. du Pont de Nemours, Dacron Research Lab., Kinston, NC. (1961).

Asst. Quality Assurance Officer, US Naval Rocket Propellant Plant, Indian Head, MD. 1958-1960)

Petroleum Inspection Officer, Naval Materials Command, Persian Gulf. (1957-1958).

4. Consulting

Biomedical Development Corp., San Antonio, TX, UltraDent Products, Utah; Kirkland and Ellis LLD, Chicago, IL; The Gillette Co., Intelligent Products Division; University of Michigan, Dept. of Dental Materials; Borrow Dental Milk Foundation; Johnson & Johnson Dental Products Co.

Patents (total of 390):

Rawls HR, Khan AU. A*n oxygen-generating biomaterial for controlled, long-term oxygen delivery to promote wound healing and tissue regeneration,* PCT No. WO2015069955A3 May 14, 2015.

Whang K, Rawls HR, Norling BK, *In Situ Formation of Nanoparticles in Resins*, (WO2010077985A1) Jul 8, 2010; (US2011/0306699 A1) published Dec 15, 2011. US Patent No. 8,779,023 issued July 15, 2014.

Rawls HR, Johnston Allen D, Norling BK, Whang K. *Restorative Resin Compositions and Methods of Use,* WIPO Patent WO2015157329A1, published Oct 15, 2015.

Rawls HR, Whang K, Barghi N, Shin D-H, and Plymale R. *Dual-Cure Dental Resins and Adhesives with Increased Cure and Color-Stability, and Low Color*, (US 20140141390 A1) May 22, 2014. U.S. Patent No. 8,785,514 issued on July 22, 2014.

Rawls HR, Whang K, Barghi N, Shin D-H, Plymale R. *Light- and Dual-Cure Dental Resins and Adhesives with Increased Cure & Color-Stability, & Low Color.* WO 2009073570 A3, 9/3/09; PCT/US08/85067, Patent Appl. 12/745,423, Pub. US 2011/0200973 A1, Published Aug. 18, 2011.

5. State(s) in which registered: (not applicable)

6. Principle Publications of Last 5 Years (Total: 124 publications: 1 book, 14 chapters, 79 journal papers, 29 patents, 6 reviews):

1) Bret H. Clough, Joni Ylostalo, Elizabeth Browder, H. Ralph Rawls, Tetsuo Nakamoto and Carl A. Gregory. "Theobromine, a major alkaloid of cocoa beans, upregulates osteogenesis by human mesenchymal stem cells in vitro and accelerates bone development in rats," *J Biomedical Materials Research,* MS# M16050351, 23-May-2016, submitted.
2) Kusakabe, Shusuke, Gen, Taiyu, Shimizu, Akihiko, Amaechi, Bennett, Rawls, HR, and Hotta, Masa "Removal of Infected Dentin Assessed by a Dentin Hardness Testing System" (*Operative Dentistry,* submitted, msc. #15-283-C).

3) Kusakabe, S., Rawls, H. R., & Hotta, M. Relationship between thin-film bond strength as measured by a scratch test, and indentation hardness for bonding agents. *Dental Materials*, 32 (3): e55-62, 2015. 10.1016/j.dental.2015.11.006
4) D. Moreira, J. Oei, H.R. Rawls, J. Wagner, L. Chu, Yiming Li, Wu Zhang and K. Whang, "A Novel Antimicrobial Orthodontic Band Cement with In Situ-Generated Silver Nanoparticles." *Angle Orthodontist*: 85: 175-183, March 2015. doi: http://dx.doi.org/10.2319/022314-127.1
5) Vivekanandhan, Venkateswarlu, Rawls, Misra, Mohanty, and Satyanarayana, Ceramics International. 03/2015; 41(2):3305-3311. DOI: 10.1016/j.ceramint.2014.10.111
6) Oei JD, Mishriki M, Barghi N, Rawls HR, Cardenas HL, Aguirre R, Whang K, "Development of a low-color, color stable, dual cure dental resin." *Dental Materials* 29(4): 405-412, 2013. http://dx.doi.org/10.1016/j.dental.2013.01.005.
7) Anusavice K, Shen C Rawls HR eds., Phillips' Science of Dental Materials, 12th ed., Elsevier/Saunders, NY, 2013. ISBN: 978-1-4377-2418-9.
8) Oei JD, Zhao WW, Chu L, DeSilva MN, Ghimire A, Rawls HR, Whang K. Antimicrobial acrylic materials with in situ generated silver nanoparticles. *J Biomed Mater Res* 100B: 409–415, 2012. DOI: 10.1002/jbm.b.31963
9) Karthikeyan R, Amaechi BT, Rawls HR, Lee VA. Antimicrobial activity of nanoemulsion on cariogenic planktonic and biofilm organisms. *Arch Oral Biology* 55(1): 15-22, 2012. PMCID: PMC3210916

7. Scientific and Professional Societies

International Association for Dental Research — American Association for Dental Research
American Chemical Society — European Organization for Caries Research
ANSI/American Dental Assoc. Sub-TAG 1, Restorative & Orthodontic Materials
American Dental Education Association (ADEA)

8. Honors and Awards

- Omicron Kappa Upsilon dental honor society
- *Fellow,* Academy of Dental Materials.
- *Fogerty Senior International Fellowship*, National Institutes of Health.
- American Men & Women of Science — Who's Who in Frontier Science & Technology
- Who's Who in the South and Southwest — Who's Who in Technology Today
- Leading Consultants in Technology — Madison's Who's Who
- Who's Who in Dental Sciences Education

9. Institutional and Professional Services in the Last Five Years

a. Institutional:

- UTHSCSA/UTSA Doctorial Graduate Program in Biomedical Engineering, Committee on Graduate Studies (COGS)
- Member, Scientific Review Panel, UTHSCSA Institute of Integration for Medicine & Science/Clinical and Translational Science Award pilot project grants program.
- Chairman, Comprehensive Dentistry Dept. Promotions and Tenure Committee (2014-present)
- Dental School Research Committee (2008-2014)
- Maria Young Awards committee (2010-present0
- Search Committee for Dean, Graduate School of Biomedical Sciences (2010).
- Awards committee, Graduate School of Biomedical Sciences (2009-2012).

b. Professional:

- Principal Investigator, NIH U01 grant: Oxarane-Acrylate System to Double the Clinical Service Life of Restorative Resins. (2013 - 2018).
- External Advisory Committee, NIH Center of Biomedical Research Excellence, LSU-SD, New Orleans, LA.
- Organizing Committee, "International Dental Materials Congress," May 27-29, 2011, Seoul, Korea
- Editorial Board, *J. Biomedical Materials Research-B, Applied Biomaterials*, Society for Biomaterials.
- Cohort member, National Affairs Committee, American Association for Dental Research
- NIH Scientific Review Group [ZRG1 MOSS-T90 S, R15: Musculoskeletal Tissue Engineering, Oral, Bone & Skeletal Muscle Biology (2012).