

## DAVID H. GRACIAS, PH.D. CURRICULUM VITAE

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### I. Education

1994-99 Ph.D., Physical Chemistry, UC Berkeley and Materials Science Division, Lawrence Berkeley National Laboratory; Advisor: G. Somorjai

1989-94 5 year Integrated M.S., Indian Institute of Technology (IIT) Kharagpur, India.

### II. Professional Experience

2009-present: Associate Professor, Chemical and Biomolecular Engineering (ChemBE), The Johns Hopkins University (JHU).

2003-09: Assistant Professor, ChemBE, JHU.

2001-03: Senior Engineer, Process Integration, R&D, Intel Corporation, Hillsboro, Oregon.

1999-01: Postdoctoral Fellow, Chemistry and Chemical Biology, Harvard; Advisor: G. Whitesides

### III. Significant Awards

2010 Humboldt Fellowship for Experienced Researchers

2008 National Institutes of Health (NIH) Director's New Innovator Award

2008 DuPont Young Professor Award

2007 Outstanding Young Engineer Award (Allan Davis Medal) from the Maryland Academy of Sciences

2007 Maryland State Official Citation for Supporting Gifted K-12 Education (Senator Ulysses Currie)

2006 Camille Dreyfus Teacher-Scholar Award

2006 Beckman Young Investigator Award

2005 National Science Foundation Career Award

### IV. Significant awards received by students while being advised by Dr. Gracias

2007 Materials Research Society (MRS): Graduate Student Gold Award (Tim Leong)

2007 Intel Science Talent Search 2007: National Winner (Emma Call)

### V. Selected Publications (out of a total of 121)

#### ORIGINAL RESEARCH PAPERS

1. M. Jamal, A. M. Zarafshar and D. H. Gracias, [Differentially photo-crosslinked polymers enable self-assembling microfluidics](#), *Nature Communications* 2:527, 1-6 (2011).

2. S. Pandey, M. Ewing, A. Kunas, N. Nguyen, D. H. Gracias\* and G. Menon\*, [Algorithmic design of self-folding polyhedra](#), *PNAS* 108, 19885-19890 (2011).

3. Y. V. Kalinin, J. S. Randhawa and D. H. Gracias, [Three Dimensional Chemical Patterns for Cellular Self-Organization](#), *Angewandte Chemie International Edition* 50, 11, 2549-2553 (2011).

4. M. Jamal, N. Bassik, J.-H. Cho, C. L. Randall and D. H. Gracias, [Directed growth of fibroblasts into three dimensional micropatterned geometries via self-assembling scaffolds](#), *Biomaterials* 31, 1683-1690 (2010).

5. T. G. Leong, C. L. Randall, B. R. Benson, N. Bassik, G. M. Stern and D. H. Gracias, [Tetherless thermobiochemically actuated microgrippers](#), *PNAS* 106, 703-708 (2009).

6. H. Ye, A. Abu-Akeel, J. Huang, H. E. Katz and D. H. Gracias, [Probing organic field effect transistors in-situ during operation using SFG](#), *Journal of the American Chemical Society (JACS)* 128, 6528-6529 (2006).

7. T. G. Leong, Z. Gu, T. Koh and D. H. Gracias, [Spatially controlled chemistry using remotely guided nanoliter scale containers](#), *Journal of the American Chemical Society (JACS)* 128 (35) 11336-11337 (2006).

8. M. Boncheva, D. H. Gracias, H. O. Jacobs and G. M. Whitesides, [Biomimetic self-assembly of a functional asymmetrical electronic device](#), *PNAS* 99, 4937-4940 (2002).
9. H. O. Jacobs, A. R. Tao, A. Schwartz, D. H. Gracias and G. M. Whitesides, [Fabrication of a cylindrical display by patterned assembly](#), *Science* 296, 323-325 (2002).
10. D. H. Gracias, J. Tien, T. L. Breen, C. Hsu and G. M. Whitesides, [Forming electrical networks in three dimensions by self-assembly](#), *Science* 289, 1170-1172 (2000).

## REVIEWS

1. C. L. Randall, E. Gultepe and D. H. Gracias, [Self-folding materials and devices for biomedical applications](#), *Trends in Biotechnology* (2011).
2. J. S. Randhawa, K. E. Laflin, N. Seelam and D. H. Gracias, [Microchemomechanical Systems](#), *Advanced Functional Materials* (2011).
3. T. G. Leong, A. M. Zarafshar and D. H. Gracias, [Three dimensional fabrication at small size scales](#), *Small* (2010).
4. R. Fernandes and D. H. Gracias, [Toward a miniaturized mechanical surgeon](#), *Materials Today* (2009).
5. D. H. Gracias, Z. Chen, Y. R. Shen and G. A. Somorjai, [Molecular characterization of polymer and polymer blend surfaces. Combined sum frequency generation surface vibrational spectroscopy and scanning force microscopy studies](#), *Accounts of Chemical Research* (1999) [Ph.D. thesis summary]

## PATENTS (out of 20 issued patents and > 5 pending applications)

1. D. H. Gracias and T. Leong, [Reconfigurable lithographic structures](#), U.S. Patent Application 20100326071, Published December 30, 2010.
2. D. H. Gracias, [Fabricating stacked chips using fluidic templated-assembly](#), U.S. Patent 7018867 Granted March 28, 2006.
3. G. M. Kloster, K. P. O'brien, M. D. Goodner, D. Michael, J. Leu, D. H. Gracias, L. D. Rockford, P. K. Moon and C. E. Barns, [Method of forming a selectively converted inter-layer dielectric using a porogen material](#), U.S. Patent 7018918, Granted March 28, 2006.

## VI. Miscellaneous highlights

- Research funded by the National Science Foundation (NSF), National Institutes of Health (NIH), Defense Threat Reduction Agency (DTRA), Army Research Laboratory (ARL) and Defense Intelligence Agency (DIA), American Chemical Society (ACS), Arnold and Mabel Beckman Foundation, Camille and Henry Dreyfus Foundation, Iacocca Family Foundation, Alexander Von Humboldt Foundation, Goldman Philanthropic Foundation, DuPont and Northrup Grumman.
- Given over 70 Invited talks at Government, Academic and Industrial Centers including NASA, NIST, MITRE, MIT, Caltech, UC Berkeley, Max Planck Institute, Xerox-PARC, Intel and HP and conferences including the American Chemical Society (ACS), Biomedical Eng. Society (BMES), American Institute of Chemical Engineers (AIChE), Materials Research Society (MRS) and the Gordon conference.
- Reviewer for over 40 journals including Science, Nature Photonics, Proceedings of the National Academy of Sciences, Angewandte Chemie and the Journal of the American Chemical Society.
- Grant reviewer for the NIH, NASA, NSF, DOD, US-CRDF, ACS, ISCAS and AAAS.
- Member of the ACS, MRS and IEEE
- Have organized outreach workshops and mentored Baltimore Public School (K-12) teachers and students in research and educational projects.