

ATROULI CHATTERJEE

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EDUCATION

University of California, Irvine Ph. D. in Chemical and Biomolecular Engineering M. S. in Chemical and Biomolecular Engineering	Irvine, CA 2019-2021 2016-2019
Cornell University M. Eng. in Biomedical Engineering	Ithaca, NY 2015-2016
University of California, Berkeley B. S. in Chemical Engineering	Berkeley, CA 2011-2015

RESEARCH EXPERIENCE

Prof. Alon Gorodetsky	Department of Chemical and Biomolecular Engineering University of California, Irvine, Irvine, CA, USA	Apr. 2017 – 2021
<ul style="list-style-type: none">• Developing strategies to enhance the production of a cephalopod structural protein (reflectin) within bacterial and mammalian cells• Leading research efforts to characterize and tune the optical properties of a cephalopod structural protein (reflectin) within mammalian cells• Collaborating on research efforts to evaluate the structural properties and aggregation behavior of a cephalopod structural protein (reflectin)		
Prof. Cynthia Reinhart-King	Department of Biomedical Engineering Cornell University, Ithaca, NY, USA	Sept. 2015 – May 2016
<ul style="list-style-type: none">• Led research efforts to fabricate a piezoelectric matrix using electro-spinning to study and control breast cancer cell motility		
Prof. Christine Wildsoet	Center for Eye Disease and Development School of Optometry University of California, Berkeley, Berkeley, CA, USA	Sept. 2013 – May 2015
<ul style="list-style-type: none">• Supported research efforts to fabricate polyethylene glycol diacrylate based hyaluronic acid membrane using electro-spinning for the development of contact lenses with drug delivery capabilities to treat nearsightedness (myopia)		
Prof. Takeo Yamaguchi	Chemical Resources Laboratory Tokyo Institute of Technology, Yokohama, Japan	June 2014 – Aug. 2014
<ul style="list-style-type: none">• Collaborated on research efforts to fabricate a PNIPAM-co-PNIPMAM mixed brush gating membrane by plasma graft polymerization and evaluated the temperature-dependent permeability of the membrane		
Prof. Richard Lee Smith	Research Center of Supercritical Fluid Technology Tohoku University, Sendai, Japan	June 2013 – Aug. 2013
<ul style="list-style-type: none">• Collaborated on research efforts to determine the thermal and physical properties of ionic liquids using thermogravimetric analyses (TGA) and Stabinger viscometry, while varying the water content of the ionic liquid using Karl Fischer titration		
Prof. Richard Lee Smith	Research Center of Supercritical Fluid Technology Tohoku University, Sendai, Japan	June 2012 – Aug. 2012
<ul style="list-style-type: none">• Collaborated on research efforts to optimize the separation of benzene derivative enantiomers with chiral ionic liquids using supercritical fluid chromatography		

PUBLICATIONS

5. Umerani, M. J., Pratakshya, P., **Chatterjee, A.**, Cerna Sanchez, J. A. *et al.* Structure, self-assembly, and properties of a truncated reflectin variant. *Proc. Nat. Acad. Sci.* **117**, 32891–32901 (2020).
4. Lu, Y., Pratakshya, P., **Chatterjee, A.**, Jia, X. *et al.* Proton conduction in inkjet-printed reflectin films. *APL Mater.* **8**, 101113 (2020).
3. **Chatterjee, A.**, Cerna Sanchez, J. A., Yamauchi, T. Vanessa, T. *et al.* Cephalopod-inspired optical engineering of human cells. *Nat Commun* **11**, 2708 (2020).
2. Kautz, R., Phan, L., Arulmoli, J., **Chatterjee, A.**, *et al.* Growth and spatial control of murine neural stem cells on reflectin films. *ACS Biomater. Sci. Eng.* **6**, 1311–1320 (2020).
1. **Chatterjee, A.**, Norton-Baker, B., Bagge, L. E., Patel, P. *et al.* An introduction to color-changing systems from the cephalopod protein reflectin. *Bioinspir. Biomim.* **13**, 045001 (2018).

ORAL PRESENTATIONS

2020 MRS Virtual Spring/Fall Meeting & Exhibit **Nov. 28 – Dec. 4, 2020**

Chatterjee, A., Farrukh, A., Gorodetsky, A. A. Production and Application of a Cephalopod-Derived Protein Based Material

SPIE: Organic Photonics and Electronics (Digital Forum) **Aug. 24 – 28, 2020**

Gorodetsky, A. A. **Chatterjee, A.** Dynamic materials inspired by cephalopods.
<https://doi.org/10.1117/12.2569648>

SPIE: Smart Structures and Nondestructive Evaluation (Digital Forum) **Apr. 27 – May 1, 2020**

Chatterjee, A., Gorodetsky, A. A. A cephalopod-inspired approach to color changing devices. <https://doi.org/10.1117/12.2557327>. 2020

MRS Fall 2019 Meeting Boston, MA, USA **Dec. 2, 2019**

Chatterjee, A., Gorodetsky, A. A. An Introduction to the Cephalopod Protein Reflectin for Biomedical Applications.

POSTER PRESENTATIONS

Asilomar Bioelectronics Symposium, Pacific Grove, CA, USA **Sept. 3 – 8, 2019**

Chatterjee, A.; Cerna, J.; Umerani, M. J.; Pratakshya, P.; Sartori, B.; Marmioli, B.; Ilc, G.; Kovačič, M.; Kautz, R.; Bernstorff, S.; Plavec, J.; Gorodetsky A. A. Structural and Electrical Characterization of a Cephalopod Structural protein.

BioEL Winterschool, Tirol, Austria **Mar. 15 – 23, 2019**

Chatterjee, A.; Cerna, J.; Umerani, M. J.; Pratakshya, P.; Sartori, B.; Marmioli, B.; Ilc, G.; Kovačič, M.; Kautz, R.; Bernstorff, S.; Plavec, J.; Gorodetsky A. A. Structural and Electrical Characterization of a Cephalopod Structural protein.

TECHNICAL SKILLS

Biological Techniques: Bacterial cell culture (BL21(DE3) *E. Coli*) • Mammalian cell culture (HEK 293, HEK 293T, ARPE-19, HRPE primary cells, MDA-MB-231, HeLa) • SDS-PAGE • DNA Mini-prep • HPLC • Western Blot • Immunofluorescence • ELISA

Optical Techniques: Optical (Brightfield and Phase Contrast) Microscopy • Fluorescence Microscopy • Confocal Light Sheet Microscopy • Quantitative Phase Microscopy • Holotomographic Microscopy • Integrating Sphere Spectroscopy • Single Plane Illumination Microscopy

Biophysical Characterization Techniques: UV/Vis Spectroscopy • Fluorescence Spectroscopy • Dynamic Light Scattering • Circular Dichroism

Material Fabrication Techniques: Electro-spinning • Plasma Graft Polymerization

Material Characterization Techniques: Tensile Testing • Scanning Electron Microscopy

Software/Programming Techniques: MatLab • COMSOL • AMPL • Igor Pro • Prism • Microsoft Office

PROFESSIONAL MEMBERSHIPS

American Chemical Society (ACS) • Materials Research Society (MRS) • The Optical Society (OSA)

LANGUAGE PROFICIENCIES

English (Native or Bilingual) • Japanese (Native or Bilingual) • Bengali (Professional Proficiency)