

# Connie H. Li

Materials Science & Technology Work: (202) 404-4545  
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## EDUCATION

Ph. D in Chemical Engineering (2002), University of California, Los Angeles (UCLA)  
B.S. in Chemical Engineering (1998), *Summa cum Laude*, UCLA

## RESEARCH INTERESTS

- Developing topological materials (e.g. topological insulator) for topological devices
- Developing prototype spintronic devices (spin-LEDs, spin valves, MTJs)
- Molecular beam epitaxy (MBE) and chemical vapor deposition (CVD) of nano-structured materials

## WORK EXPERIENCE

Dec. 2004 – present *Research Scientist, NP Level IV*  
Naval Research Laboratory, Washington, DC  
Sept. 2002 – Dec. 2004 *NRC Postdoctoral Research Associate*  
Naval Research Laboratory, Washington, DC  
Sept. 1998 – Aug. 2002 *Graduate Research Assistant*  
Chemical Engineering Department, UCLA

## HONORS AND AWARDS

- Alan Berman Research Publication Award, 2015, 2016
- Naval Research Lab Review Award, 2009, 2014
- Alan Berman Research Publication Award, 2008, 2012, 2013
- Chancellor's Dissertation Year Fellowship, 2001-2002
- Outstanding undergraduate & graduate student in Chemical Engineering, UCLA, 1998, 2002
- National Science Foundation (NSF) Graduate Fellowship, 1998-2001

## SOCIETY INVOLVEMENT

- Intermag – Program Committee (2017), Conference proceeding editor (2017-present)
- SPIE – Program Committee (2014-present)
- Magnetism and Magnetic Materials – Program Committee (2017), Editor (2015-present)
- American Physical Society – DMP Focus Topic Organizer (2018)
- American Vacuum Society, Materials Research Society, AIChE, Tau Beta Pi (member)

## SELECT PUBLICATIONS

1. **C. H. Li**, O. M. J. van 't Erve, S. Rajput, L. Li, and B.T. Jonker, "Matters Arising: Reply to: "On the understanding of current-induced spin polarization of three-dimensional topological

- insulators”, *Nature Communications*, **10**, 2523 (2019).
2. **C. H. Li**, O. M. J. van ‘t Erve, C. Yan, L. Li, and B. T. Jonker, “Electrical Detection of Spin-to-Charge Conversion in a Topological Insulator  $\text{Bi}_2\text{Te}_3$ ”, *Sci. Rep.*, **8**, 10265 (2018).
  3. **C. H. Li**, K. M. McCreary, and B. T. Jonker, “Spatial control of photoluminescence at room temperature by ferroelectric domains in monolayer  $\text{WS}_2$  / PZT hybrid structures”, *ACS Omega*, **1** 1075 (2016).
  4. **C. H. Li**, O. M. J. van ‘t Erve, S. Rajput, L. Li, and B.T. Jonker, “Direct comparison of current-induced spin polarization in topological insulator  $\text{Bi}_2\text{Se}_3$  and InAs Rashba states”, *Nature Communications*, **7**, 13518 (2016).
  5. O. M. J. van ‘t Erve, A. L. Friedman, **C. H. Li**, J. T. Robinson, J. Connell, L. J. Lauhon, B. T. Jonker, “Spin transport and Hanle effect in silicon nanowires using graphene tunnel barriers,” *Nature Communications* **6**, 7541 (2015).
  6. **C. H. Li**, O. M. J. van ‘t Erve, J. T. Robinson, Y. Liu, L. Li, and B. T. Jonker, “Electrical detection of charge-current-induced spin polarization due to spin-momentum locking in  $\text{Bi}_2\text{Se}_3$ ,” *Nature Nanotechnology* **9**, 218–224 (2014).
  7. A. L. Friedman, O. M. J. van ‘t Erve, **C. H. Li**, J. T. Robinson, and B. T. Jonker, “Homoepitaxial tunnel barriers: Functionalized graphene on graphene for charge and spin transport,” *Nature Communications* **5**, 3161 (2014).
  8. Y. Fan, K. J. Smith, G. Lüpke, A. T. Hanbicki, R. Goswami, **C. H. Li**, H. B. Zhao, and B. T. Jonker, “Exchange bias of the interface spin system at the Fe/MgO interface,” *Nature Nanotechnology*, **8**, 438 (2013).
  9. O. M. J. van ‘t Erve, A. L. Friedman, E. Cobas, **C. H. Li**, J. T. Robinson, and B. T. Jonker, “Low-resistance spin injection into silicon using graphene tunnel barriers,” *Nature Nanotechnology*, **7**, 737 (2012).
  10. **C. H. Li**, O. M. J. van ‘t Erve, and B. T. Jonker, “Electrical injection and detection of spin accumulation in silicon to 500K with magnetic metal / silicon dioxide contacts,” *Nature Communications*, **2**, 245 (2011).
  11. B. T. Jonker, G. Kioseoglou, A. T. Hanbicki, **C. H. Li**, and P. E. Thompson, “Electrical spin injection into silicon from a ferromagnetic metal / tunnel barrier contact,” *Nature Physics* **3**, 542 (2007).
  12. **C. H. Li**, G. Kioseoglou, O. M. J. van ‘t Erve, M. E. Ware, D. Gammon, R. M. Stroud, B. T. Jonker, R. Mallory, M. Yasar, and A. Petrou, “Electrical Spin Pumping of Quantum Dots at Room Temperature,” *Appl. Phys. Lett.* **86**, 132503 (2005).

#### **PATENTS ISSUED (3 PENDING):**

1. O. M. J. van ‘t Erve, A. T. Hanbicki, K. M. McCreary, **C. H. Li**, and B. T. Jonker, “Method for an optical modulator using the spin Hall effect in metals”, US 10,139,655 B2 (11/27/2018).
2. **C. H. Li**, O. M. J. van ‘t Erve, J. T. Robinson, Y. Liu, L. Li, and B.T. Jonker, “Direct Electrical Detection of Spin-Momentum Locking in Topological Insulator  $\text{Bi}_2\text{Se}_3$ ,” US 10,132,880 B2 (11/20/2018).
3. A. L. Friedman, O. M. J. van ‘t Erve, **C. H. Li**, J. T. Robinson, and B. T. Jonker, “Process for forming homoepitaxial tunnel barriers with functionalized graphene-on-graphene for electronic device applications,” US 9,614,063 B2 (7/4/2017).

4. **C. H. Li**, R. Goswami, G. G. Jernigan, C. S. Hellberg, and B.T. Jonker, "Solid phase epitaxy of 3C-SiC on Si(001)", US 9,673,047 B2 (6/6/2017).