

# Precise Chemical, Physical, and Electronic Nanoscale Contacts

**Paul S. Weiss**

*California NanoSystems Institute and Departments of Chemistry & Biochemistry and Materials Science & Engineering, UCLA, Los Angeles, CA 90095, United States. <http://www.nano.ucla.edu>  
[psw@cnsi.ucla.edu](mailto:psw@cnsi.ucla.edu)*

The physical, electronic, mechanical, and chemical connections that materials make to one another and to the outside world are critical. Just as the properties and applications of conventional semiconductor devices depend on these contacts, so do nanomaterials, many nanoscale measurements, and devices of the future. We discuss the important roles that these contacts can play in preserving key transport and other properties. Initial nanoscale connections and measurements guide the path to future opportunities and challenges ahead. Band alignment and minimally disruptive connections are both targets and can be characterized in both experiment and theory. I discuss our initial forays into this area in a number of materials systems [1,2].

## References

- [1] P. Han et al., ACS Nano, 9, 12035 (2014).
- [2] J. Kim et al., Nano Letters, 14, 2946-2951 (2014).