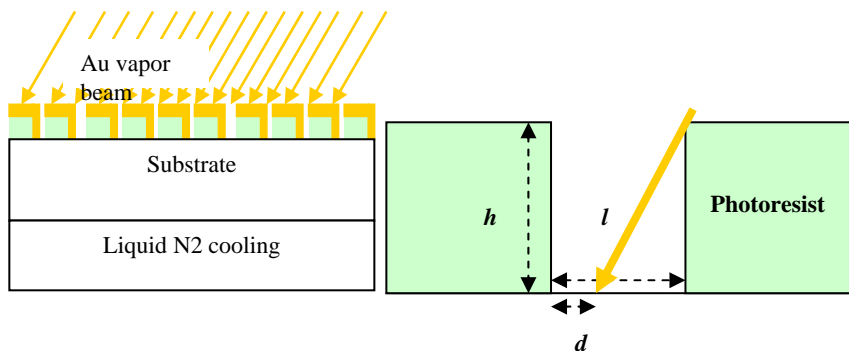


A Simple Approach to the Fabrication of Ultra-narrow Metal Wires

Allen M. Goldman (PI) & Yu Chen
Physics, University of Minnesota
NNIN Facility utilized: Nanofabrication Center

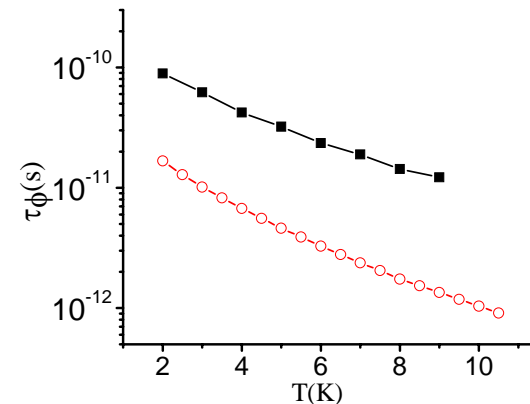
● Description of Work

- ◆ Wires as narrow as 5 nm and tens of thousands of nanometers in length were formed using EBL and angled evaporation
- ◆ Measurements of $R(T)$ and $R(H)$ were used to extract the phase coherence time, τ_ϕ .



● MAJOR OBSERVATIONS

- ◆ Direct signature of weak anti-localization was observed in $R(T)$.
- ◆ The coherence time could easily be extracted.
- ◆ Angled evaporation and cooling during deposition reduced the wire width.
- ◆ Representative values of τ_ϕ for magnetoresistance (squares) and $R(T)$ (open circles) are shown below.



● Publications

- ◆ Yu Chen and A. M. Goldman, J. Appl. Phys. **103**, 054312 (2008)