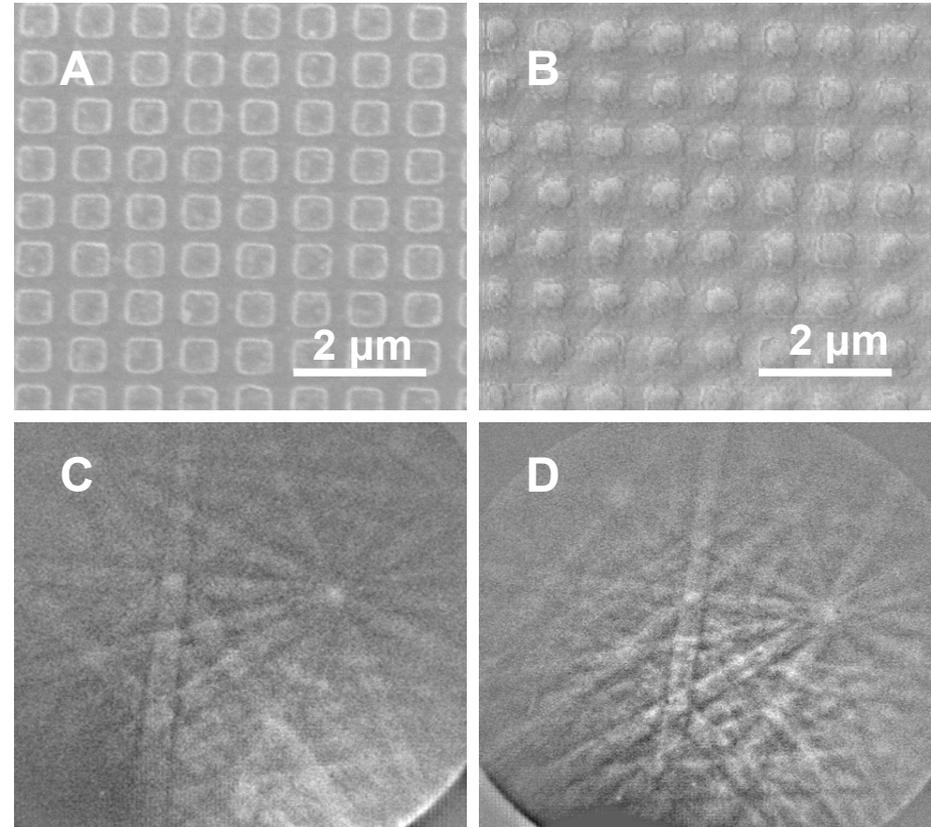


# Generation of a Pristine Sapphire Surface by Oxidation and Solid State Conversion of a Sputtered Al Coating

*H.M. Chan, R.P. Vinci, Lehigh University, DMR-0211078*

- The Lehigh AGOG process is based on deposition of an aluminum thin film followed by high temperature conversion of the film to single crystal sapphire.
- The AGOG process has been successfully adapted to give surface patterning of sapphire with nanoscale features.
- When applied to substrates, this type of structure has the potential to give enhanced performance of LED devices.



*(A) SEM micrograph of patterned Al mesas, (B) Patterned substrate after conversion to sapphire showing pattern retention. EBSD patterns taken from single mesa (C) and sapphire substrate (D) prove that the mesas are epitaxial single crystals.*

# Generation of a Pristine Sapphire Surface by Oxidation and Solid State Conversion of a Sputtered Al Coating

*H.M. Chan, R.P. Vinci, Lehigh University, DMR-0211078*

## Outreach:

- S. Dutta (graduate student) and H.M. Chan participated in the Lehigh CHOICES program for middle school girls. The girls built fruit batteries (see photo below), and used the SEM to observe various samples.
- R.P. Vinci was one of the organizers and instructors for the first ASM Materials Camp for high school students to be held at Lehigh University. This week-long camp introduced the discipline of Materials Science to juniors and seniors.



<http://www3.lehigh.edu/engineering/news/choices2004.asp>



<http://www3.lehigh.edu/engineering/news/materialscamp04.asp>