Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

**Improving step bunch ordering by tuning the interplay between thermodynamic and kinetic factors**[1] LUGANG BAI, Department of Materials Science and Engineering, Univeristy of Utah, Salt Lake City, UT 84112, JERRY TERSOFF, IBM Thomas J. Watson Research Center, Yorktown Heights, New York 10598, FENG LIU, Department of Materials Science and Engineering, Univeristy of Utah, Salt Lake City, UT 84112, DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING, UNIVERISTY OF UTAH, SALT LAKE CITY, UT 84112 TEAM, IBM THOMAS J. WATSON RESEARCH CENTER, YORKTOWN HEIGHTS, NEW YORK 10598 COLLABORATION — Strain-induced self-organized step-flow growth provides an effective method for fabricating quantum wire arrays. Here we report development of a modified step-flow growth model accounting both thermodynamic step-step interaction due to misfit strain and kinetic step-edge barriers. We show that improved step bunch ordering can be achieved by tuning the interplay of thermodynamic and kinetic factors. Computer simulations show that the best step bunch ordering occurs when the two factors drive the average bunch size to correspond to an integer number of steps in the bunch.

[1]This work is supported by DOE Grant No. DE-FG03-01ER45875.

Lugang Bai
Department of Materials Science and Engineering, Univeristy of Utah, Salt Lake City, UT 84112

Date submitted: 27 Nov 2006 Electronic form version 1.4