

Atomistic Insights on Surface Quality Control via Annealing Process in AlGaN Thin Film Growth

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These figures and movies are to help people have a more intuitive understanding of the film growth and annealing process.

1. **Fig. S1 and Movie1** depict the growth process of AlGaN on AlN films. The number of atoms has been indicated in the introduction.
2. **Fig. S2 and Movie2** depict the entire process when the constant temperature annealing temperature is 4000 K.
3. **Fig. S3 and Movie3** depicts a partial image of the entire process of laser thermal annealing process.

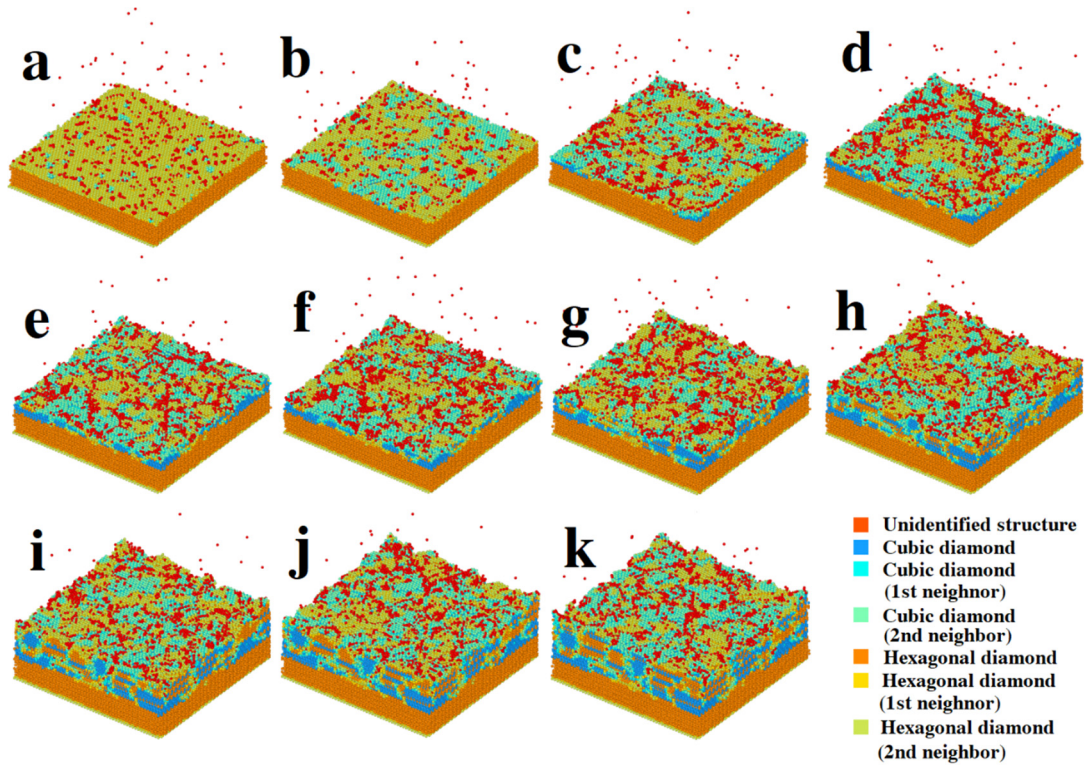


Figure S1. Atomistic configurations of deposited AlGaN films with (a) 63656, (b) 68274, (c) 75059, (d) 82256, (e) 89455, (f) 92068, (g) 109083, (h) 127224, (i) 138736, (j) 146352, (k) 154844 atoms.

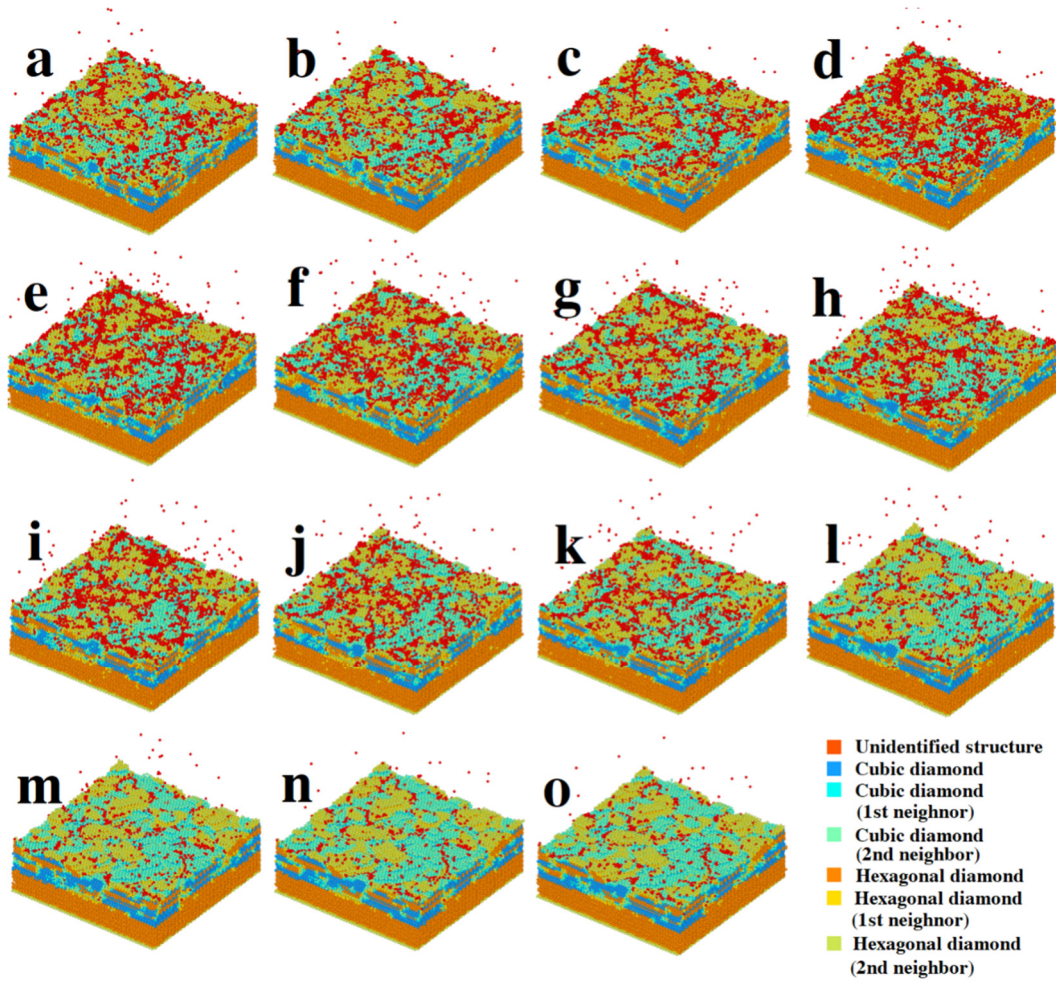


Figure S2. Atomistic configurations of AlGaN films at different times during annealing (4000 K). (a) 0 ps, (b) 10 ps, (c) 20 ps, (d) 32 ps, (e) 46 ps, (f) 59.5 ps, (g) 71.5 ps, (h) 84 ps, (i) 100 ps, (j) 112 ps, (k) 127 ps, (l) 135 ps, (m) 147.5 ps, (n) 153.5 ps, (o) 154 ps (end).

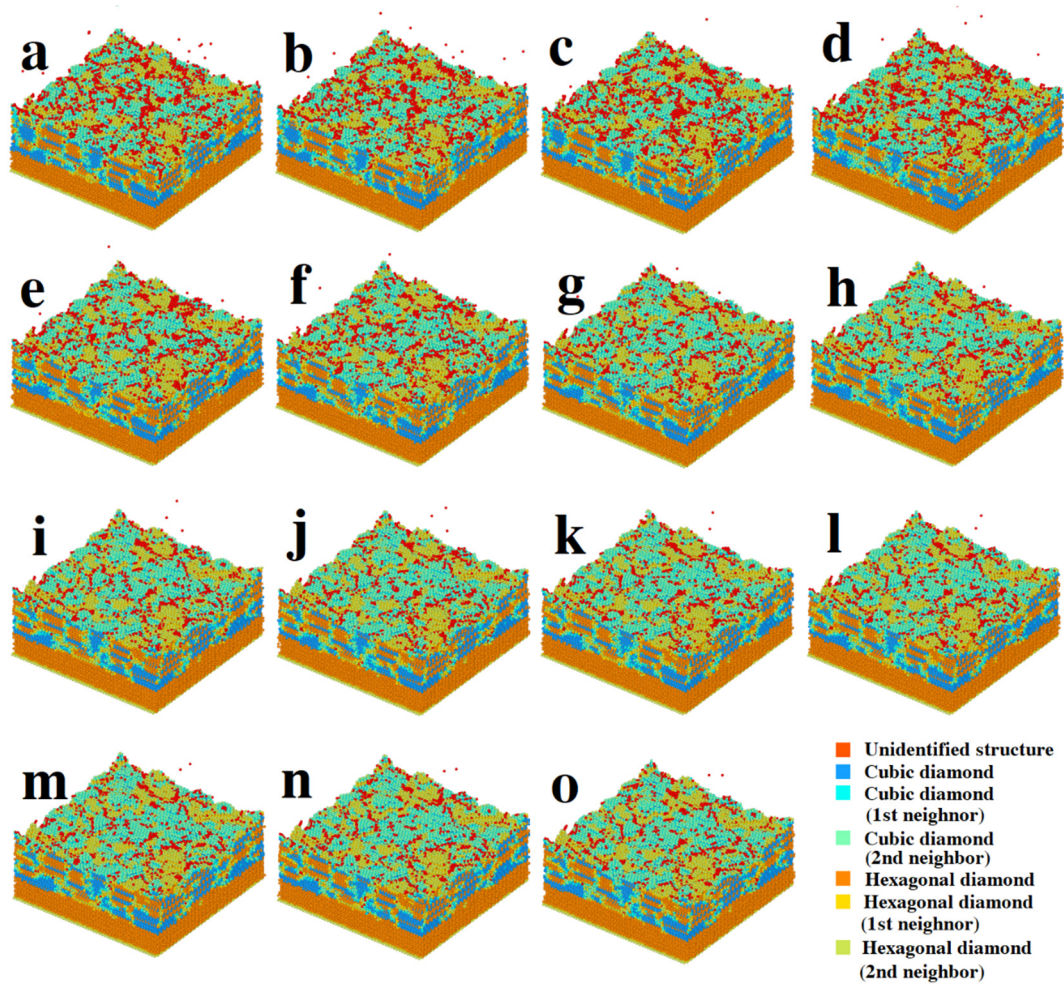


Figure S3. Atomistic configurations of AlGaIn films at different times during laser thermal annealing. (a) 0 ps, (b) 10 ps, (c) 20.5 ps, (d) 40.5 ps, (e) 64 ps, (f) 80 ps, (g) 100 ps, (h) 124 ps, (i) 163 ps, (j) 182 ps, (k) 205 ps, (l) 220 ps, (m) 252 ps, (n) 270 ps, (o) 280 ps.