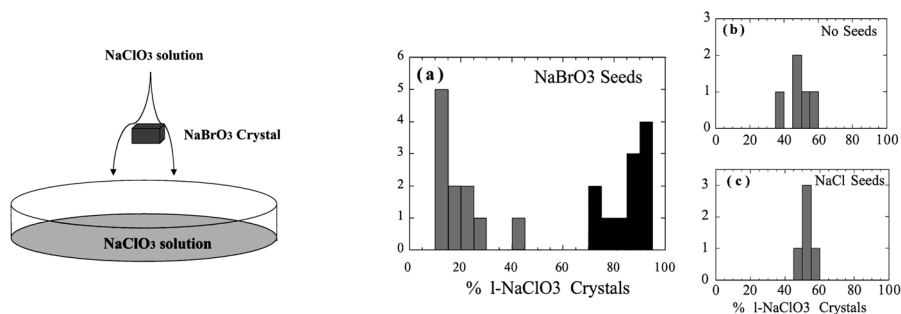


**Figure 1.4** Secondary nucleation effect on polymorphism. Adapted from ref. 55 with permission from American Chemical Society, Copyright 2014.



**Figure 1.5** Chirally selective crystallization of  $\text{NaClO}_3$  using seeds of  $\text{NaBrO}_3$  crystals. (a) Histograms of percentage of L- $\text{NaClO}_3$  crystals obtained with L- and D- $\text{NaBrO}_3$  seeds, shown by light and dark bars, respectively. (b) Histogram of percentage of L crystals obtained with no seed. (c) Histogram of percentage of L crystals obtained with achiral  $\text{NaCl}$  seed. Reproduced from ref. 79, <http://dx.doi.org/10.1103/PhysRevLett.84.4405> with permission from American Physical Society, Copyright 2000.

Quantification of secondary nucleation kinetics can be performed at various conditions:

1. Batch seeding with single or multiple crystals by counting numbers of newly formed particles (either total or as function of time)
2. Steady state MSMPR experiments by measuring steady state crystal size distribution (CSD) and analyzing number density data (assuming absence of primary nucleation, agglomeration and breakage plus ensuring that the outlet stream is fully representative of the crystallizer contents)
3. Other arrangements (unsteady state/batch/plug flow) by measuring CSD and fitting with population balance models to estimate secondary nucleation kinetics (assuming certain functional expressions)