Oral | Symbol M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS36_1PM1]Interface- and nano-phenomena on crystal growth

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Thu. May 1, 2014 2:15 PM - 4:00 PM 314 (3F)

Recent developments of observations in nano-scale opened a detail discussion concerning mechanisms of crystal growth based on interface phenomena including dynamics. In this session, growth mechanisms of crystals will be discussed focusing on interface phenomena of minerals in the fields of biological origin, global environment, planets and space in addition to general minerals.

3:45 PM - 4:00 PM

[MIS36-P05_PG]Advanced techniques in the latest quantitative image analysis for crystal growth experiments

3-min talk in an oral session

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In the research field of crystal growth science, the targeted scales are varied from nano-scaled small space to visible large space. Recently the spatial scale expands toward underground or orbital space. In the metrology field, there is the scaling-law for xyz-t space-time space, beyond which we extend the measurable limits. The contactless microscopes like interferometers or laser microscopes are very valuable tools for analyzing crystal growth in long time and surface-features in wide area because they have advantages to obtain data in high speed without spoiling the sample surface. Their time-scale is variable in the off-line processing, if the data were sequentially obtained by auto-measurements, so that we can trace the real growth phenomena. By this method, we succeeded to observed lysozyme growths in the International Space Station laboratory, ice-water interface and dissolving clay.Moreover, the spatial scale can be changed by shifting the field of view with observing and the off-line process of these obtained images as stitching. In general, huge data fragments measured by certain time interval or position shifting contain offsets or distortions and the data amount is much bigger than the speed of manual corrections. Hence, there are many cases that whole data cannot be utilized for final analysis. We attempted to eliminate artifacts generated by microscopes using a system consist of commercially supplied software and dedicated plug-in programs for consistent normalizations and corrections between planes to be stitched. In this session, we will introduce some examples tried quantitative analysis of huge multiple data including the time-line display expressing time-based changes at certain line on a plane of growing and dissolving crystal surfaces.