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In-Situ Observation of Elementary Spiral Steps on Ice Crystal Surfaces by Advanced Optical Microscopy (Times 14 point)

Gen Sazaki1, Hiroki Nada2, Ken-ichiro Murata1, Ken Nagashima1 (Times 12 point)

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Ice is one of the most abundant and ubiquitous materials on earth’s surface. Hence, the phase transition of ice governs a wide variety of natural phenomena, such as weather, environment-related issues, and life in a cryosphere. Hence the molecular-level understanding of ice crystal surfaces is crucially important. (Times 12 point)

A crystal bounded by flat crystal faces grows layer by layer [1], utilizing laterally growing molecular layers that have the minimum height determined by the crystal structure. Hence, growing ends of such molecular layers, so-called “elementary steps” play a key role during the growth and sublimation/melting of ice crystals. To visualize elementary steps on ice crystal surfaces, we have developed layer confocal microscopy combined with differential interference contrast microscopy (LCM-DIM) [2]. (Times 12 point)

An abstract should not exceed one A4 page.   
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An abstract book will be printed in black and white, although it will be in color in a pdf version.

1) A.A. Chernov, “Modern Crystallography III”, Springer-Verlag, Berlin, (1984), p127-129. 🡨 A book

2) G. Sazaki, S. Zepeda, S. Nakatsubo, E. Yokoyama, Y. Furukawa, *Proc. Nat. Accad. Sci.*, **107**, 19702-19707 (2010). 🡨 A paper published in a journal