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Optimization of Crystallization Condition in Gel-Tube Method. H. Tanaka^{a*}, M. Yamanaka^a, K. Inaka^b, M. Sato^c, S. Takahashi^a, S. Sugiyama^b, S. Sano^c, M. Motohara^c, T. Kobayashi^c, and T. Tanaka^c, ^aJapan Space Forum, Tokyo, 100-0004 JAPAN, ^bMaruwa Food Industries, Inc., Nara, 639-1123 JAPAN, ^cJapan Aerospace Exploration Agency, Ibaraki, 305-8505 JAPAN.

'Gel-Tube' is a method for a protein crystallization using a simplified counter-diffusion technique [1], based on gel-acupunctured method [2]. A gel in a silicon tube, through which protein and precipitant solution diffuse each other from different direction, can be easily attached to the end of a capillary. Using 1-dimensional (1-D) simulation, it is possible to estimate the diffusion process inside the capillary and to design crystallization conditions, such as protein and precipitant concentration, gel-tube and sample solution lengths, pre-mixing precipitant concentration in protein solution and pre-saturating precipitant concentration in gel-tube, and time to obtain the first crystal. We will introduce some tips for optimization of crystallization condition and also a method for controlling diffusion in a capillary.

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[1] Tanaka, H. et al., J. Synchrotron Rad, 2004, 11, 45-48.

[2] Garcia-Ruiz, JM., Moreno, A., Acta Cryst., 1994, D54, 484-490.