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A challenge to develop a continuous centrifuge for precision particle size fractionation JUN-ICHI KAWAHARA, National Institute of Advanced Industrial Science and Technology (AIST, JAPAN), YOICHIRO ITO, National Institutes of Health — In producing particles, including nanoparticles, of narrow particle size distribution, synthetic methods have been widely used, since considerable amounts of products could rather simply be obtained. On the other hand, such sort of processes have a significant drawback, since applicable range of materials is rather limited. Under such circumstances, we have started to develop a continuous centrifuge for precision particle size fractionation, which could be applied, in principle, to any material, in stark contrast to synthetic processes. Besides, continuous systems could realize not only considerable processing capacity but also the exact particle sizes we want, in contrast to batch systems. Furthermore, since such methodology is based upon principles completely different from those of synthetic processes, it could complement them, by further sharpening the size distribution of the products, for example. We chose liquid phase as separation medium, since it enables high processing capacity and also suppresses the possible aggregation of the particles. At present, there are no continuous particle size fractionation systems in liquid phase applicable to the size range below several micrometers. The designs to widen this range down to submicrometers and further, together with realization of high resolution, are to be discussed.

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