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New Tools for Protein Crystal Retrieval and Handling. R.E. Thorne, G. Chew, M. Sochor, Cornell Univ., Ithaca, NY 14853.

Conventional metal microtools (developed for electron microscopy sample preparation) are ill-suited to the small size and extreme fragility of protein crystals. We have developed a set of microfabricated tools for common crystal manipulation tasks including (1) dislodging crystals adhered to slides or crystallization trays, (2) separating crystals or crystal fragments, (3) transferring crystals between soaking solutions, (4) cutting protein skins, gels and lipid phases to extract crystals, (5) measuring dimensions of crystals as small as 20 microns, and (6) actively grabbing crystals so that they are immobilized without damage. Made of 10 micron thick polyimide, these transparent tools are rigid, yet they can easily be deformed to press flat against well bottoms, and their spring-like action minimizes the chance of crystal damage. These properties make them well-suited to both manual and automated crystal manipulation.