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EasyAccess Frame - sliding puzzle inspired tool for eased crystal handling

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The experimental workflow of macromolecular crystallography has been improved enormously in the last two decades, especially regarding speed and throughput. One step of this workflow, namely the manipulation and harvesting of crystals, remains labour- and time-intense even though considerable efforts have been applied. In order to tackle this bottleneck, we developed a novel, low-cost device that acts as a lid for 96-well crystallization plates. It includes 96 movable parts that allow access to the individual experiment and simultaneously minimize the evaporation of the other experiments. Primary results show the successful evaporation minimization of many typical crystallization cocktails for up to six hours. The device, named EasyAccess Frame, avoids any sealing by foil and unsealing of individual wells in the process and thus facilitates easy crystal manipulation and harvesting. Therefore, the device increases throughput and is useful for a range of macromolecular crystallography experiments, especially screening campaigns. The device is successfully being used in crystallographic fragment screening campaigns at HZB and significantly reduces time and effort necessary for the crystal handling involved.

Barthel T., Huschmann F. U., Wallacher D., Feiler C. G., Klebe G., Weiss M. S., Wollenhaupt J., Facilitated crystal handling using a simple device for evaporation reduction in microtiter plates, 2021, accepted for publication in J. Appl. Cryst.

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