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Synthesis of Many Different Types of Organic Small Molecules Using One Automated Process. — Small-molecule synthesis usually relies on procedures that are highly customized for each target. A broadly applicable automated process could greatly increase the accessibility of this class of compounds to enable investigations of their practical potential. Herein, the synthesis of 14 distinct classes of small molecules is reported using the same fully automated process. The scope of a building block-based synthesis platform is expanded to include even C_{sp3}-rich polycyclic natural product frameworks and discovering a catch-and-release chromatographic purification protocol applicable to all of the corresponding intermediates. With thousands of compatible building blocks already commercially available, many small molecules are now accessible with this platform. More broadly, these findings provide a practicable route to a more general and automated approach for small-molecule synthesis. — (LI, J.; BALLMER*, S. G.; GILLIS, E. P.; FUJII, S.; SCHMIDT, M. J.; PALAZZOLO, A. M. E.; LEHMANN, J. W.; MOREHOUSE, G. F.; BURKE*, M. D.; Science (Washington, DC, U. S.) 347 (2015) 6227, 1221-1226, http://dx.doi.org/10.1126/science.aaa5414 ; Dep. Chem., Univ. Ill., Urbana, IL 61801, USA; Eng.) — S. Adam