

MECHANOCHEMISTRY: THE USE OF MILLS IN ORGANIC SYNTHESIS**Bolm, C.**

Institute of Organic Chemistry, Landoltweg 1a, 52074 Aachen
 RWTH Aachen University
 Germany
Carsten.Bolm@oc.RWTH-Aachen.de

IUPAC defines a "mechano-chemical reaction" as a "chemical reaction that is induced by the direct absorption of mechanical energy".¹ Such activation mode can be useful and beneficial in both synthesis and catalysis.² Mills play a central role in such processes. Selected recent examples from our group will be covered in the presentation.³ In addition, it is demonstrated how the vessel geometry (Figure 1) affects the milling efficiency.⁴

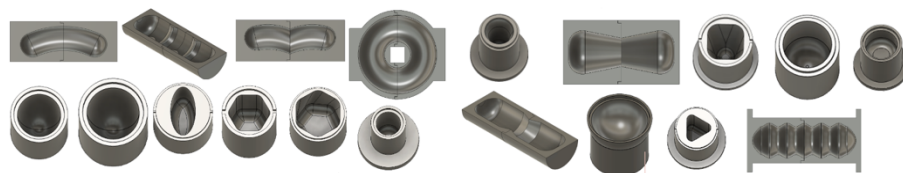


Figure 1: Vessels with different geometries used in a mixer mill

1. IUPAC. *Compendium of Chemical Terminology*, 2nd ed. (the "Gold Book"), Blackwell Scientific Publications, Oxford, 1997 and cited in *PAC* **2004**, 76, 889.
2. James, S. L.; Collier, P.; Parkin, I.; Hyett, G.; Braga, D.; Maini, L.; Jones, B.; Friščić, T.; Bolm, C.; Krebs, A.; Mack, J.; Waddell, D. C.; Shearouse, W. C.; Orpen, G.; Adams, C.; Steed, J. W.; Harris, K. D. M. *Chem. Soc. Rev.* **2012**, 41, 413.
3. (a) Biswas, S.; Bolm, C. *Org. Lett.* **2024**, 26, 1511. (b) Sahu, C. C.; Biswas, S.; Hommelsheim, R.; Bolm, C. *RSC Mechanochemistry* **2024**, 1, 38. (c) Pan, S.; Mulks, F.; Wu, P.; Rissanen, K.; Bolm, C. *Angew. Chem. Int. Ed.* **2024**, 63, e202316702. (d) Amer, M.; Backer, L.; Buschmann, H.; Handler, N.; Scherf-Clavel, O.; Holzgrabe, U.; Bolm, C. *Anal. Chem.* **2024**, 96, 13166. (e) Biswas, S.; Bolm, C. *Org. Lett.* **2024**, 26, 1511. (f) Quaranta, C.; d'Anciães Almeida Silva, I.; Moos, S.; Bartalucci, E.; Hendrickx, L.; Fahl, B. M. D.; Pasqualin, I. C.; Puccetti, F.; Zobel, M.; Bolm, C.; Wiegand, T. *Angew. Chem. Int. Ed.* **2024**, 63, e200410801. (g) Pan, S.; Wu, P.; Bampi, S.; Ward, J. S.; Rissanen, K.; Bolm, C. *Angew. Chem. Int. Ed.* **2024**, 63, e202413181. (h) Wu, P.; Ling, L.; Hu, Y.; Pan, S.; Bolm, C. *ACS Sustainable Chem. Eng.* **2024**, 12, 15875. (i) Pan, S.; Wu, P.; Bampi, S.; Ward, J. S.; Rissanen, K.; Bolm, C. *Angew. Chem. Int. Ed.* **2024**, 63, e202413181. (j) Pan, S.; Wu, P.; Hu, Y.; Bolm, C. *Green Synth. Catal.* **2025**, DOI: 10.1016/j.gresc.2025.03.016. (k) Holzgrabe, U.; Buschmann, H.; Handler, N.; Amer, M. M.; Hommelsheim, R.; Beweries, T.; Bolm, C. *Chimia* **2025**, 79, 614.
4. Jansen, T.; Thomas, L. C.; Bolm, C. *ChemSusChem* **2026**, 19, e202502452.