

DSM Science & Technology Awards (NORTH) 2009	
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Our two hands are mirror images, implying that they cannot be superimposed on each other. This property can also be observed in molecules. And just like your right hand only fits in a right glove, the activity of the two mirror images molecules can be different in the human body. Therefore, routes to obtain molecules of single handedness are of paramount practical importance, especially for pharmaceutical compounds.

We have developed a new method to convert mixtures of molecules of both hands into a desired handedness using abrasive grinding of slurries. Compared to conventional methods to make only one handedness, this is a remarkably simple and reliable technique with virtually 100% yield. Besides the practical applications for pharmaceutical compounds, our results also outline a possible pathway to molecules of single handedness as observed in nature, thereby contributing to the discussion on the emergence of prebiotic molecules of single handedness that form the chemical basis of life.