

A Fast CD Spectrometer For Reading Enantiomeric Excess Directly From The Micro-well Plate

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High-throughput screening (HTS) is routinely used in asymmetric synthesis to find “hits” for enantiomerically enriched compounds. This calls for a fast method of measuring enantiomeric excess (ee) values in true high-throughput fashion. Conventional chiral HPLC is not ideal for screening thousands of reactions on a daily basis. In recent years, the Anslyn group, among others, has developed rapid chiroptical methods to determine ee for HTS.^{1,2} This paper describes the most recent advancement in this area.

The new instrument is a vertical circular dichroism (CD) spectrometer that essentially turns the measuring light beam from the horizontal direction to the vertical. A vertical light beam affords direct measurement of the CD signal, thus ee, of the sample held in a flat-bottom well of the micro-well plate. The micro-well plate is moved by a computer-controlled XY stage for reading ee in all wells. This CD reader eliminates the time-consuming process of 1) transferring the contents from each well of the micro-well plate into a cuvette, and 2) cleaning between each measurement, as is necessary when using a standard CD spectrometer. Furthermore, by avoiding elution completely, this instrument is well suited to identifying “hits” quickly using HTS.

1 H.H. Jo, C.-Y. Lin and E.V. Anslyn, *Acc. Chem. Res.* **2014**, *47*, 2212.

2 H.H. Jo, X. Gao, L. You, E.V. Anslyn and M.J. Krische, *Chem. Sci.* **2015**, *6*, 6747.

Example data collected from the Vertical CD spectrometer:

