

MS30-01 | SOLID-STATE CHIRAL RESOLUTION VIA METAL COMPLEXATION

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Spontaneous chiral resolution upon ionic co-crystals (ICCs) formation is observed reacting the amino acid histidine or proline with lithium halides. The Li^+ cations selectively link to molecules of the same chirality, forming enantiopure chains, resulting in a chiral resolution process in the solid-state *via* conglomerate formation.

One possible reason for chiral preference in lithium ICCs could be the tetrahedral geometry around the lithium cations, which favours the coordination of molecules of the same handedness. Complexation of enantiopure *S*-etiracetam (levetiracetam) and of racemic *RS*-etiracetam to zinc in the form of their ZnCl_2 salts has also been investigated, as zinc is known to favour tetrahedral coordination. By varying the stoichiometric ratio it is possible to “switch” reversibly from a stable racemic compound to a conglomerate. Co-crystallization with metal ions favouring tetrahedral coordination can thus be successfully used to obtain chiral selectivity and conglomerate formation from racemic compounds.

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[2] O. Shemchuk, L. Degli Esposti, F. Grepioni and D. Braga, *CrystEngComm*, 2017, **19**, 6267-6273

[3] O. Shemchuk, L. Song, K. Robeyns, D. Braga, F. Grepioni and T. Leyssens, *Chem. Commun.*, 2018, **54**, 10890-10892.

[4] L. Song, O. Shemchuk, K. Robeyns, D. Braga, F. Grepioni, and T. Leyssens, *Cryst.Growth Des.*, 2019, DOI:10.1021/acs.cgd.9b00136