

**W0117**

**Crystal Engineering of Pharmaceutical Co-crystals of Piracetam.** J.A. McMahon, V. Peddy, M.J. Zaworotko, Dept. of Chemistry, Univ. of South Florida, SCA 400, Tampa, FL, 33620.

Pharmaceutical co-crystals represent a new paradigm in the formulation of active pharmaceutical ingredients (APIs). APIs represent a challenge to crystal engineers for both fundamental and applied reasons. APIs often have multiple avenues for self-assembly and are therefore predisposed to polymorphism. That APIs are promiscuous in the context of polymorphism is a critical issue for the pharmaceutical industry: from a regulatory perspective it has been established that bioactivity can change between forms; from an intellectual property perspective, polymorphic forms are established in law as discrete materials and new forms can be patented. Polymorphism is generally observed in single component crystals, however, it is also observed in multi-component systems. An analysis of the CSD indicates that polymorphism in co-crystals may occur less often than single component crystals with fewer than 10 examples found in the CSD. In this contribution we demonstrate how the primary amide-carboxylic acid supramolecular heterosynthon can be exploited to generate pharmaceutical co-crystals of a polymorphic active pharmaceutical ingredient, Piracetam, and whether the co-crystals would exhibit polymorphism based on a series of solvent-mediated grinding experiments.