

## MS36-01 | IONIC CO-CRYSTALS

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In this talk the reasons for the widespread interest generated by ionic co-crystals, namely the co-crystals formed by a neutral molecule and a salt, are addressed. In particular, the class of compounds obtained by co-crystallization of neutral organic molecules and inorganic salts (e.g. alkali and alkaline earth halides, sulfates, phosphates etc.) is discussed with the focus on their applications in diverse areas, such as pharmaceuticals, food, fertilizers and enzyme activity inhibitors.

It is argued that, in terms of structure and intermolecular bonding features, these compounds do not differ from classical coordination compounds (complexes) and that their popularity arises from the effectiveness of the organic-inorganic assembly to enhance thermal stability, improve particle size and morphology and change significantly solubility and dissolution rate with respect to those of the pure active ingredients. Since most ionic co-crystals are prepared by solvent free mechanochemical methods, the importance of structure determination by powder diffraction is outlined. Furthermore, the preparation and characterization of solid solutions of isomorphous ionic co-crystals will be discussed.

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[3] D. Braga, F. Grepioni, L. Maini, D. Capucci, S. Nanna, J. Wouters, L. Aerts, L. Quéré, *Chem. Commun.*, 2012, 48, 8219-8221.

[4] L. Casali, L. Mazzei, O. Shemchuk, K. Honer, F. Grepioni, S. Ciurli, D. Braga, and J. Baltrusaitis, *Chem. Commun.*, 2018, 54, 7637-7640.