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**Can we use  $\pi$ - $\pi$  Interactions in the Designed Synthesis of Inorganic-Organic Hybrid Materials?** Jesús Valdés-Martínez,<sup>1</sup> Rubén A. Toscano,<sup>1</sup> Domingo Salazar-Mendoza,<sup>1</sup> John Desper<sup>2</sup>,<sup>1</sup> Instituto de Química, Univ. Nacional Autónoma de México, Circuito Exterior, Ciudad Universitaria, 04510 Coyoacán, Cd. México, D. F., México, jvaldes@servidor.unam.mx, <sup>2</sup> Kansas State Univ., Dept.

The design and synthesis of crystal structures requires the use of reliable directional intermolecular interactions. The understanding of these interactions constitutes an important field of study in crystal engineering. Although there are few studies on metal containing intermolecular interactions, the charge-assisted *cis*-MCl<sub>2</sub>...HN<sup>+</sup> synthon has proved to be a very reliable interaction. On the other side  $\pi$ - $\pi$  interaction are many times present in crystal structures but are rarely used in a designed way.

In this work we evaluate the possibility of obtaining recurring extended motifs, topologically similar to those obtained with tetrahalometallate anions and 4,4-bipyridinium cations, using the *cis*-MCl<sub>2</sub>...HN<sup>+</sup> synthon and  $\pi$ - $\pi$  interactions; and evaluate the effect of geometric and steric factors on the supramolecular structures obtained.

