

**MS29-O4** Insights into molecular spreading and bridging in chromosome condensation from the complex structure of Spo0J and

*par*

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In the chromosome partitioning system (*parABS*), the partition protein (ParB) and its regulatory protein (ParA) act cooperatively through *parS* DNA to facilitate chromosome segregation. ParB oligomer and *parS* interact together to form a high-order nucleoprotein that is required for the loading of the structural maintenance of chromosomes proteins onto the chromosome for chromosomal DNA condensation. Spo0J is a member of ParB superfamily. The binding of *parS* and Spo0J from *H. pylori* (*HpSpo0J*) was characterized. The *HpSpo0J-parS* complex structure was determined by Se-MAD method. The overall structure of *HpSpo0J* is in an elongated shape including a flexible N-terminal domain for protein-protein interaction and a conserved DNA-binding domain for *parS* binding. A structure model for molecular spreading and bridging in chromosome condensation is proposed.

**Keywords:** Chromosome partitioning system, *parABS*

**MS29-O5** Crystal-Packing and Spin-CrossOver in some Molecular Solids. Trends and new Features.

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One of the key-stones of modern science is the ability to determine the crystal structures of materials. To this end, diffraction techniques are in constant improvement always pushing the frontiers of investigation. For example, if focusing only on the **spin crossover (SCO)** molecular material field [1], recent X-ray diffraction developments permit to investigate local structures in materials that are not strictly crystalline, structural modifications at the picoseconds time scale or crystal structures under external perturbations as pressure or light irradiation [2-4]. As a result a **very fine description of the structure-properties relationships in molecular SCO solids can be achieved.** [5, 6].

In this context, we will present a multi-scale description of the SCO mechanism in molecular solids (Fig. 1) based on the **crystal-packing analysis** and focusing on **structural movies** showing the sample breathing of the **intermolecular interactions** and on the full determination of (pressure-temperature-light) **phase diagrams**. In addition, recent X-Ray diffraction on powders has revealed a potential **structural fatigability** upon cycling in a SCO compound. This fatigability, connected with some properties of the crystal-packing, will also be discussed [7].

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