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Fullerene in a Metal-Organic Matrix: Design of the Electronic Structure MICHEL COTE, Departement de physique, Universite de Montreal, SEBASTIEN HAMEL, Physics & Advanced Technologies / H-Division, Lawrence Livermore National Laboratory, VLADIMIR TIMOCHEVSKI, Department of Physics, McGill University — By combining C_{60} fullerenes and a metal-organic framework, a novel material has been designed with enhanced electronic properties aimed at improving the superconducting transition temperature. Combining these materials within the same structure gives new possibilities to tailor the electronic properties. Higher superconducting transition temperatures have previously been achieved in the fullerene solids by intercalating with ever-larger alkali atoms into the C_{60} crystal. The current study demonstrates by means of state-of-the-art calculations that MOF can be used as a placeholder to set the distance between C_{60} fullerenes introduced inside their pores giving another means to increase the distance between them and further tailor their electronic properties.

Michel Cote
Departement de physique, Universite de Montreal

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