

Study of metal-insulator transition Rb_4C_{60} by Compton scattering, under pressure.

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LDA band structure calculations on the bct Rb_4C_{60} claim a metallic behavior for this material but they are strongly at odds with the NMR and photoemission finding of an insulating ground state. The Jahn-Teller distortion of the molecule in the molecular solid, which is not taken into account by calculations, could be responsible of the mismatch between theoretical and experimental CPD's of A_4C_{60} compounds. In particular, this effect – which has not yet been clearly experimentally observed – is invoked to be responsible of the Mott insulating phase in A_4C_{60} . In order to switch off the Jahn Teller effect, we measured Compton profiles of Rb_4C_{60} below and above the metal-insulator transition at 0.8 Gpa. We compare their difference with the corresponding calculated results, obtained from *ab-initio* calculations of the energy band structure. Calculations allowed us to quantitatively discriminate kinetic energy effect induced by pressure and Jahn-Teller effect. We found that within experimental statistical accuracy, Jahn-Teller effect cannot be clearly evidenced by Compton scattering measurements. Finally, the main observable contribution proceeds from kinetic effect.