Magnetic Resonance Study of Critical Behaviors in a Conducting Polymer System

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Systematic conductivity and magnetic resonance measurements were made in this work for a series of I2-doped poly[2-buthoxy-5-methoxy-1,4-phenylenevinylene] (PBMPV) conducting polymers. Study of the spin/charge dynamics in these unique systems enabled us to present the most comprehensive evidences up to date for a critical behavior of collective bipolaron formation as the doping proceeds, and for a fractal and critical behavior associated with the delocalization of the charge-carrier wavefunction.