Superconductivity of calcium C_{60} intercalation compound synthesized by shock-wave pressure

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High-pressure stimulated intercalation technique is often potentially efficient because intercalation processes are usually followed by essential negative volumetric effect (30-50%), i.e. the volume of synthesis product is much smaller than initial total volume of reagents. The pressure applied to the system can be elevated up to hundreds of kilobars by using shock waves. The shock-wave impact, usually a few microseconds long, is much shorter than the intercalation reaction time for any of the traditional gas-, liquid-phase and electrochemical methods. Therefore, productive intercalation using this technique would imply diffusion rate of intercalant to the host matrix many orders of magnitude higher than in traditional techniques. Here we report on the attempt to use shock-wave pressure method for calcium intercalation of C_{60}- fullerite under high pressure up to 240 kbar induced by a shock-wave. Magnetometric measurements have revealed superconductivity of the intercalated samples at 30K [1].

[1] Yu. A. Ossipyan, N. S. Sidorov, A. V. Palnichenko, O. M. Vyaselev, M. V. Kartsovnik M. Opel, V. V. Avdonin, D. V. Shakhrai, N. V. Biktimirova, and A. A. Golyshev. *Chem. Phys. Lett.* **457**, 74 (2008).