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Doping-

induced Charge-Density-Wave ATSUSHI NOMURA, KAZUHIKO YAMAYA, SHIGERU TAKAYANAGI, KOICHI ICHIMURA, TORU MATSUURA, SATOSHI TANDA, Hokkaido University, HOKKAIDO UNIVERSITY TEAM — Doping is a useful method for searching new characters in solids, as we can see in the discoveries of impurity semiconductors and high-temperature superconductors. If a Charge-Density-Wave (CDW) is induced in materials which do not exhibit a CDW, new CDW properties might be brought there. TaSe₃ exhibits no CDW transition but a superconductivity transition at about 2 K while it has a quasi-one-dimensional chain structure as well as typical CDW conductors, NbSe₃, TaS₃, and NbS₃. Therefore, TaSe₃ is one of the suitable materials for the induction of a CDW by doping, and we tried to induce a CDW in TaSe₃ by doping Cu. Cu concentration was determined by inductively coupled plasma atomic emission spectroscopy (ICP-AES). The high Cu concentration was consistent with the high value of residual resistance ($R(4.5\text{ K})/(R(280\text{ K}) - R(4.5\text{ K}))$). Single-crystal X-ray diffraction pattern (XRD) showed an expansion of the *c*-axis in Cu-doped TaSe₃. The temperature dependence of the resistivity showed the anomaly at 80-100 K in Cu-doped TaSe₃, which was never observed in pure TaSe₃. These results suggest that the Cu-doping induces a CDW. We will discuss the relation between the resistivity anomaly and superconductivity.

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