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Charge density wave transport in heterogeneously doped $NbSe_3$ single crystals by masked ion (B^+, Li^+) implantation KALYAN SASMAL, ASANGA WIJESINGHE, DHARSHANA WIJESUNDERA, Department of Physics and TCSUH, University of Houston, Houston, TX 77204, USA, ZHONGJIA TANG, ARNOLD GULOY, Department of Chemistry and TCSUH, University of Houston, Houston, TX 77204, USA, WEI-KAN CHU, JOHN H. MILLER, Department of Physics and TCSUH, University of Houston, Houston, TX 77204, USA, ION BEAM LAB DEPARTMENT OF PHYSICS,UH COLLABORATION, DEPARTMENT OF CHEMISTRY, UH COLLABORATION — Charge-density wave is competing electron spectrum instability of superconductivity (SC). CDW transport vs. SC with boundary between CDWs and SC are well known examples of correlated transport of macroscopic numbers of electrons.CDW superconductors include layered dichalcogenides, $NbSe_3$. On selective area medium energy ion (B^+, Li^+) implantation was used to create irradiated/unmodified/irradiated CDW heterostructures with well-defined interfaces on single $NbSe_3$ crystal. The effects of impurities go beyond simply increasing CDW pinning (J.P.McCarten.et.al J.Phys.IV France 9,1999).The dV/dI vs. bias at several temperatures, and zero-bias resistance vs. temperature, where two voltage contacts straddle the interface (near the boundary between B^+/ Li^+-implanted and unimplanted regions) are well studied. Injected charge B^+/Li^+ is a non-isoelectronic impurity. The results of ongoing investigations of similar studies of boron- and lithium-doped $NbSe_3$ will be discussed.

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