

Abstract Submitted  
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**Carrier density control and phase diagram of  $\text{Li}_x\text{ZrNCl}$  superconductors** YASUJIRO TAGUCHI, ATSUSHI KITORA, YOSHIHIRO IWASA, Institute for Materials Research, Tohoku University — We succeeded in synthesizing a series of  $\text{Li}_x\text{ZrNCl}$  samples with controlled doping level  $x$  ( $0 \leq x \leq 0.3$ ) which are confirmed to be of single phase by means of synchrotron x-ray diffraction measurements. We found that  $T_c$  rapidly increases upon reducing Li concentration below  $x=0.12$  to reach the maximum value of 15.2 K at  $x=0.06$ , and that a superconductor-to-insulator transition (SIT) is encountered at  $x=0.05$  due to the Anderson localization effect. Such an increase in  $T_c$  on the verge of SIT seems to be difficult to explain by the conventional theory, but may be indicative of the charge fluctuation contribution to superconductivity in low-carrier-density systems.

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