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REVIEW HIGHLIGHT

Research progress on identification of the high T_c superconductivity and superconducting phase in $La_3Ni_2O_7$ under pressure

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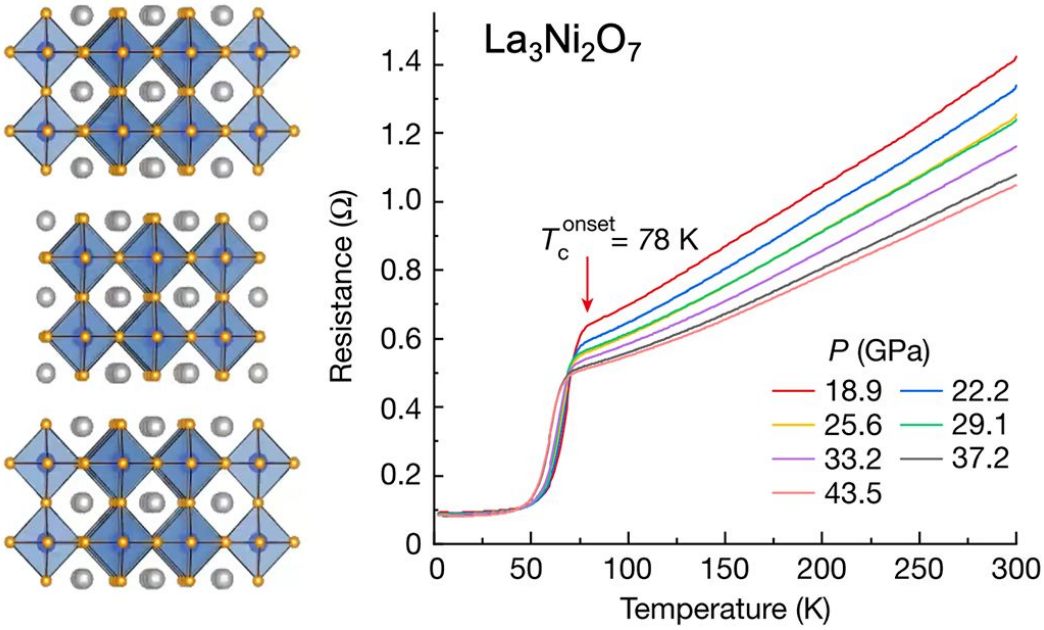
Author introduction

Meng Wang is a professor in the School of Physics at Sun Yat-sen University. He completed his Ph.D. in condensed matter physics at the Institute of Physics, Chinese Academy of Sciences in 2013. He was a postdoctoral research associate at the University of California, Berkeley, from 2013 to 2016. He studies high-T_c superconductivity, quantum magnets, and functional magnetism using neutron scattering, high-pressure, and various single-crystal growth techniques.



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Abstract We introduce experimental investigations on the high T_c superconductivity at 80 K in the bilayer nickelate $La_3Ni_2O_7$ under a 14 GPa pressure. The superconductivity emerges coincidently with a structural transition from *Amam* to *I4/mmm*. Both zero resistance and diamagnetic response, which are essential for superconductivity, were observed. A multislice electron ptychography technique was employed to visualize the oxygen. The results confirm the superconducting phase is the bilayer phase of $La_3Ni_2O_7$ with low oxygen vacancies.

Keywords bilayer nickelate, high-T_c superconductivity

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