

Abstract Submitted
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Enhancement of Superconductivity of Beryllium at High Pressure KATSUYA SHIMIZU, KAZUHISA KUBOTA, TAKAHIRO KATSUOKA, ATSUSHI MIYAKE, MASAFUMI SAKATA, YUKI NAKAMOTO, Osaka University, YASUO OHISHI, JASRI/SPring-8 — Among elements shows superconductivity at high pressure, some elements show the large enhancement of the transition temperature (T_c) at higher pressures. In the case of lithium, the T_c at ambient pressure is 0.4 mK which is the lowest observed value in whole elements, however, is enhanced by pressure up to near 20 K [1]. And calcium, which is on the same group II and not superconductive at ambient pressure, shows the highest T_c of elements at 29 K under pressure [2]. Then we focused on beryllium which is near to them on the periodic table. At ambient pressure, T_c of beryllium is 24 mK. We measured the electrical resistance at high pressure ($P < 50$ GPa) and low temperature ($T > 100$ mK) and found that the T_c rose up to few Kelvin at pressure above 20 GPa and reached up to 3.7 K at 30 GPa. In this pressure range the hcp crystal structure is stable at room temperature. We performed a powder X-ray diffraction measurement at room temperature and low temperature in BL10XU at SPring-8 and found a discontinuous change in c/a ratio at around 25 GPa.

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[2] M. Sakata, Y. Nakamoto, and K. Shimizu, *Phys. Rev. B* 83, 220512 (2011).

[3] K. Nakano, Y. Akahama and H. Kawamura, *J. Phys.: Condens. Matter* 14, 10569–10573 (2002).

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