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The second generation superthermal Ultra-Cold Neutron Source at RCNP EDGARD PIERRE, RCNP, YASUHIRO MASUDA, SHINSUKE KAWASAKI, SUN CHAN JEONG, YUTAKA WATANABE, KEK, KICHIJI HATANAKA, RYOHEI MATSUMIYA, YUN CHANG SHIN, RCNP, KENSAKU MATSUTA, MOTOTSUGU MIHARA, Osaka University — The project of a second generation superthermal ultra-cold neutron (UCN) source is currently going on at RCNP, Osaka University, Japan. It is aiming to produce the world's highest density of polarized UCNs using down-scattering of spallation-produced and moderated cold neutrons in superfluid helium (He-II) at 0.6 K. This project is developed in collaboration between KEK (Tsukuba, Japan) and RCNP. The first generation UCN source was using a vertical extraction and was optimized from 2002 to 2012 to increase its density of UCN from 0.7 UCN/cc to 26 UCN/cc. We have built a second generation UCN source which use a horizontal extraction system thanks to the energy boost induced by the field of a superconducting polarizer magnet (SCM). The SCM allows only one spin state to pass through, which make our UCN source a source of polarized UCN. Polarization is kept thanks to new UCN guides. The first experimental results, the performances and the future improvements of this second generation source will be presented in this talk.

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