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Intense, Pure and Stable Highly Charged Ion Beams from the AECR Ion Source at KVI-CART.

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At KVI-CART, an upgrade of the AECR ion source is in preparation, with the main objective to increase the intensity, stability and purity of the highly charged ion beams. To increase the intensity a new hexapole will be installed with stronger Nd-Fe-B magnets. To further increase the magnetization, the temperature of the hexapole bars will be lowered, making use of the temperature dependence of the coercivity of the Nd-Fe-B material. The stability of the highly charged ion beams will be improved by changing the cooling sequence of the hexapole from an on-off sequence to a proportionally controlled system. Regarding the purity of the highly charged xenon beams, the choice of the enriched xenon isotope with respect to the possible contaminants originating from the material of the plasma chamber (Si, S, Mg), determines the purity of the 30 MeV/u highly charged xenon beams at KVI-CART.

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