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Quantum beam generations via the laser-cluster interactions YUJI FUKUDA, Japan Atomic Energy Agency, ANATOLY FAENOV, TANIA PIKUZ, MOTONOBU TAMPO, AKIFUMI YOGO, MASAKI KANDO, YUKIO HAYASHI, TAKESHI KAMESHIMA, TAKAYUKI HOMMA, ALEXANDER PIROZHKOV, YOSHIAKI KATO, TOSHIKI TAJIMA, HIROYUKI DAIDO, SERGEI BULANOV, JAPAN ATOMIC ENERGY AGENCY COLLABORATION, JOINT INSTITUTE FOR HIGH TEMPERATURE OF RUSSIAN ACADEMIA OF SCIENCE COLLABORATION — The novel soft X-ray light source using the supersonic expansion of the mixed gas of He and CO_2, when irradiated by a femtosecond Ti:sapphire laser pulse, is observed to enhance the radiation of soft X-rays from the CO_2 clusters. Using this soft X-ray emissions, nanostructure images of 100-nm thick Mo foils in a wide field of view (mm^2 scale) with high spatial resolution (800 nm) are obtained with high dynamic range LiF crystal detectors. We also demonstrate the acceleration of charged particles via the laser-cluster interactions.

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