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**Pressure Generation Using Micro Size Nano-Polycrystalline Diamond Anvil** TAKEHIKO YAGI, TAKESHI SAKAI, TETSUO IRIFUNE, GRC, Ehime University, YUYA SUZUKI, YASUSHI KURODA, Hitachi High-Technologies Corporation — Since the first report of static high-pressure generation above mega bar using diamond anvil (Mao and Bell, 1978), further extension of pressure range was achieved mainly by the reduction of culet size. Nowadays it became possible to do experiments at the condition corresponding to the center of the Earth, that is above 350 GPa, using diamond anvils with a culet size of less than 50 microns. Dubrovisky et al. (2012) reported a generation of pressure above 600 GPa using micro-ball nanodiamond anvils, which were synthesized from grassy carbon in the multi-anvil high-pressure and high-temperature apparatus. Here we report the trial to achieve very high pressures using micro size nano-polycrystalline diamond anvils, which were fabricated using Focused Ion Beam (FIB) technique. This technique allows us to make micro-size diamond anvil with a culet size of 3 microns precisely from the nano-polycrystalline diamond, which was invented at Ehime University, and is believed to be one of the hardest materials so far known. The micro-anvils were placed at the center of ordinary diamond anvils with a culet size of 300 micron and compressed in the pressure transmitting media which applies confining pressure to the micro-anvils. The detail of experiments will be reported.

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