Chemical doping and pressure effects on the noncentrosymmetric superconductors ZrRe$_6$ and BiPd\(^1\) MOJAMMEL ALAM KHAN, DAVID P. YOUNG, AHMAD US SALEHEEN, AMAR KARKI, DANA BROWNE, P.W. ADAMS, TAPAS SAMANTA, Louisiana State University — Polycrystalline samples of ZrRe$_6$ doped with Ti, W and Os and BiPd doped with Te and Ni were made using arc melting and RF-induction furnaces. Variation of the superconducting transition temperature with different types of doping was observed. Small suppression of $T_c$ was observed for both hole and electron doping in ZrRe$_6$ samples. Suppression in $T_c$ was also observed for BiPd. The effect of hydrostatic pressure on $T_c$ was also determined for both compounds. Effect of Re depreciation on $T_c$ for ZrRe$_6$ were observed by synthesizing samples, ZrRe$_{5.95-5.85}$. In addition, small diameter wires (0.0005” $\sim$ 0.004”) of BiPd were synthesized for critical current density measurements. The critical temperature of the wires was found to be slightly higher ($\sim$4.07 K) than that reported for bulk samples ($\sim$3.78 K).

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