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Commensurate N₂-O₂ Alloys at High Pressures BRUCE BAER, JAE-HYUN PARK KLEPEIS, CHOONG-SHIK YOO, LLNL — Several high pressure binary mixtures have been investigated over the past fifteen years. The phase diagrams of many of these systems have been shown to contain one or more van der Waals compounds. Often, the crystal structures of these compounds are quite unique from those of the parent pure compounds. In this talk we will look at the compounds formed by certain mixtures of nitrogen and oxygen at very high pressures. Compounds with oxygen content as high as 40% suggest that there may be commensurate alloys that can be metallized in the diamond cell. The spectroscopy and crystal structures of these alloys also have important implications concerning the crystal structure of ϵ -O₂ and the presence of O₄ in pure oxygen at high pressure. This work has been supported by the LDRD and PDRP programs at Lawrence Livermore National Laboratory, University of California under the auspices of the U.S. Department of Energy under Contract No. W-7405-ENG-48.

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