

Abstract Submitted
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The metal-insulator transition in La_xWO_3 and Y_xWO_3 MICHAEL HOCH¹, National High Magnetic Field Laboratory, Tallahassee, FL 32310., CHARLES KASL, School of Physics, University of the Witwatersrand, Johannesburg, South Africa. — The metal-insulator (MI) transition in the trivalent-ion doped cubic tungsten bronzes, La_xWO_3 and Y_xWO_3 ($0.05 < x < 0.20$), has been investigated using low temperature electrical transport, NMR and magnetization measurements on sintered samples. The critical concentration is estimated to be $x_c = 0.07$ with some uncertainty because a mixed phase appears below $x = 0.085$. The trivalent ions donate their electrons into the WO_3 (t_{2g}) conduction band. Hall effect measurements as a function of T indicate that partial freeze-out of carriers occurs at low temperatures for $x < 0.12$. However, no evidence for local moments is obtained. The results suggest that for $0.07 < x < 0.12$ an intermediate just-metallic phase, with properties that evolve with x , is important. The findings are compared with available theory for the MI transition in tungsten - bronzes.

¹School of Physics, University of the Witwatersrand, Johannesburg, South Africa.

Michael Hoch
National High Magnetic Field Laboratory, Tallahassee, FL 32310.

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