

Abstract for an Invited Paper
for the MAR07 Meeting of
The American Physical Society

High Tc Superconductivity –1987

DOUGLAS FINNEMORE, Iowa State University

The discovery of superconductivity in the cuprate class of conducting oxides brought a flash of sunlight on one of the fields condensed matter physics that many of us had thought was rather mature and fairly well understood. Alas, it was not so. In addition to opening a whole new class of materials to the study of correlated motion of charge carriers, it opened a new mind-set that materials with complex chemical bonding can lead to totally new phenomena. The tasks of materials preparation escalated, and with it came the development of totally new spectral probes of the electron gas and the electronic structure in metals. The task is to use complexity so that the interplay of adjacent correlated motion can be used to generate new phenomena that will in turn perform novel functions.