

C. Corlett, L. Gilbert-Saunders, Division of Chemical and Physical Sciences, Missouri Southern State University. **SYNTHESIS OF VARIOUS METAL THIN FILMS BY A SOLUTION PASTE FOR APPLICATIONS IN SOLAR CELLS.** Greenhouse gas emissions have been a growing concern in recent years pushing research efforts into alternative energy sources such as solar energy. There are many varieties of solar cells, one of the newer types being made of thin films. The initial prototype consists of a metal thin film of Cu_2ZnSnS_4 (CZTS). The scope of this project is to replace the “Sn” in the prototype with GeS ($CuZnGeS$, CZGS) and PbS ($CuZnPbS$, CZPS). These materials were chosen for their low cost, commonality and similarities to silicon, the most common semiconductor for solar cell applications. These three thin films can be prepared by a solution based process, using metal salts to limit exposure to toxic chemicals. The elemental composition and morphology of the CZTS thin film were confirmed using Electron Dispersive X-ray Spectroscopy and Scanning Electron Microscopy. The surface of the film was determined to be mostly uniform with localities of higher material density and/or voids.