

Abstract Submitted
for the TSF09 Meeting of
The American Physical Society

The nanoscale grain size of materials of electrodes of AMTEC and its longevity M.A.K. LODHI, Texas Tech U, JAVID SAMI, Punjab U — The Alkali Metal Thermal-to-Electric Converter (AMTEC) is perhaps one of the most desirable devices for directly converting heat into electrical energy, particularly for space applications. Two major components responsible for power output of AMTEC are the electrolyte and the electrode. In this work we have focused the research on the AMTEC electrodes, which have further reduced the power degradation as the time goes by in using the AMTEC. If the grain size of the electrode material reaches a certain dimension, about 750 nm, the power output starts degrading fast. It is very important because this condition should not occur until after the desirable lifetime of AMTEC and its acceptable fraction of power degradation have reached. We have worked out the parameters for a 15 years of life and 10% of acceptable power degradation factor for various electrode materials. This study aims at improving the performance of the electrode by looking into the changes of the material properties with respect to time. These parameters refer to the grain growth involved in the grain mobility model for electrode materials

M.A.K. Lodhi

Date submitted: 02 Oct 2009

Electronic form version 1.4