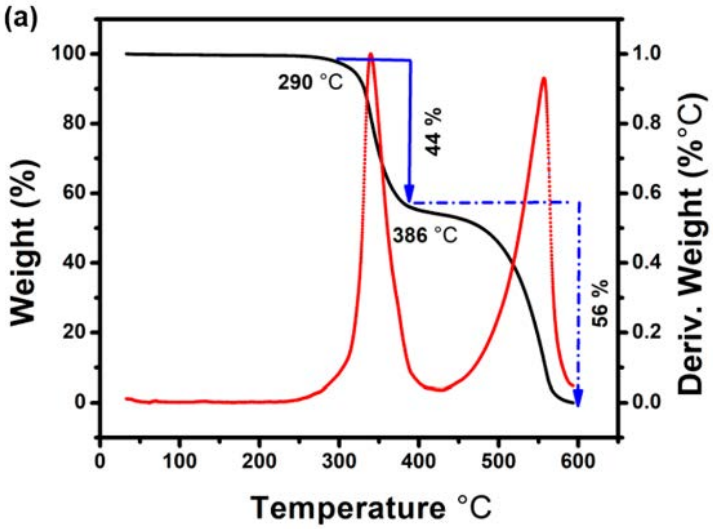
THERMAL STABILITY OF A PEROVSKITE MATERIAL FOR SOLAR CELL TECHNOLOGY

INTRODUCTION

Perovskite based materials are one of the most recent categories of solar cell materials. Various organic-inorganics compositions have been studied, all having in common a perovskite crystalline structure, and displaying interesting photovoltaic efficiency compared to other PV cells. In this work by researchers at the University of Science and Technology Beijing, lead bromides perovskites were studied by TGA to measure their thermal stability.

EXPERIMENT

- Sample: 20mg (C7H18N2) PbBr4
- Instrument: Themys One (formerly Labsys Evo)
- Thermal profile: Heating from room temperature to 600°C at 10°C/min
- Atmosphere: nitrogen



RESULTS

No mass loss is recorded up to 290°C, suggesting good material stability on that temperature range.

Above that, thermal degradation occurs in 2 steps, with no residue at 600°C. The first ends at 386°C and represents 44% of the total weight, and the second ends at 600°C.

Chenkai Deng et al. Broadband Photoluminescence in 2D Organic–Inorganic Hybrid Perovskites: (C7H18N2)PbBr4 and (C9H22N2)PbBr4. The Journal of Physical Chemistry Letters. 2020 Vol 11/Issue 8

INSTRUMENT

THEMYS ONE

HIGH SENSITIVITY BALANCE FOR THE DETECTION OF SMALL MASS VARIATIONS
Specifically designed for TGA analysis

CONVENIENCE OF ONE FURNACE
To reach temperatures as high as **1150°C or 1600°C**

PLUG AND PLAY INTERCHANGEABLE RODS
To perform TGA only, TG-DSC, TG-DTA, and 3D high sensitivity/Cp measurements

EXTERNAL COUPLING CAPABILITY
Including evolved gas analysers.