

ペロブスカイト太陽電池の効率的な安定性評価

(京大化研) ○Richard Murdey・松重 優子・石倉 靖久・Minh Anh Truong・中村 智也・若宮 淳志 Accelerated Lifetime Testing of Perovskite Solar Cells (*Institute for Chemical Research, Kyoto University*) ○Richard Murdey, Yuko Matsushige, Yasuhisa Ishikura, Minh Anh Truong, Tomoya Nakamura, Atsushi Wakamiya

An accelerated test protocol for mixed composition metal halide perovskite solar cells is established in order to investigate the device stability under dark storage condition. With this test, called the stability accelerated lifetime test (SALT), the time for the device to reach 80% output (T_{80}) is reduced to the order of a few days, allowing fast, iterative evaluation of material and device stability. The accelerated test results of perovskite devices with stabilizing PEAI or 4F-PEAI additive are linked to real-world storage lifetimes^{1,2)} with the aid of a model rate equation and supporting analytical framework.

Keywords : Solar Cell, Metal Halide Perovskite, Device, Stability, Testing

金属ハライドペロブスカイト太陽電池の安定性を評価するための、独自の加速試験手法 (Stability Accelerated Lifetime Test; SALT) の開発を行った。本手法により、太陽電池素子の出力が最初の 80% に低下するまでの時間 (T_{80}) を数日程度まで短縮でき、素子の安定性を速やかに評価することが可能になった。独自の反応速度モデルを用いた解析により、SALT 法の加速試験結果を実際の劣化^{1,2)}の経時変化へと対応させることができた。

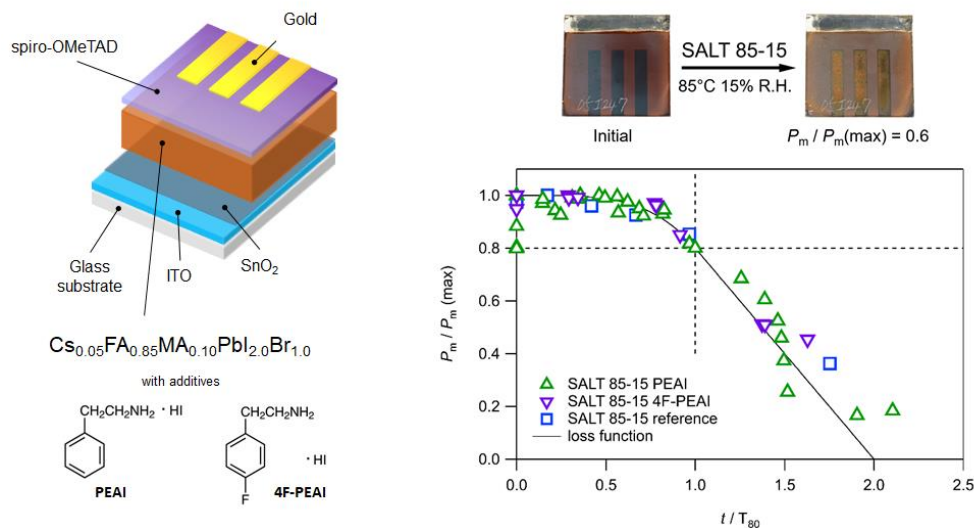


Figure 1. The perovskite test cells and stability accelerated lifetime test (SALT) results at 85 °C and 15% relative humidity (R.H.).

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