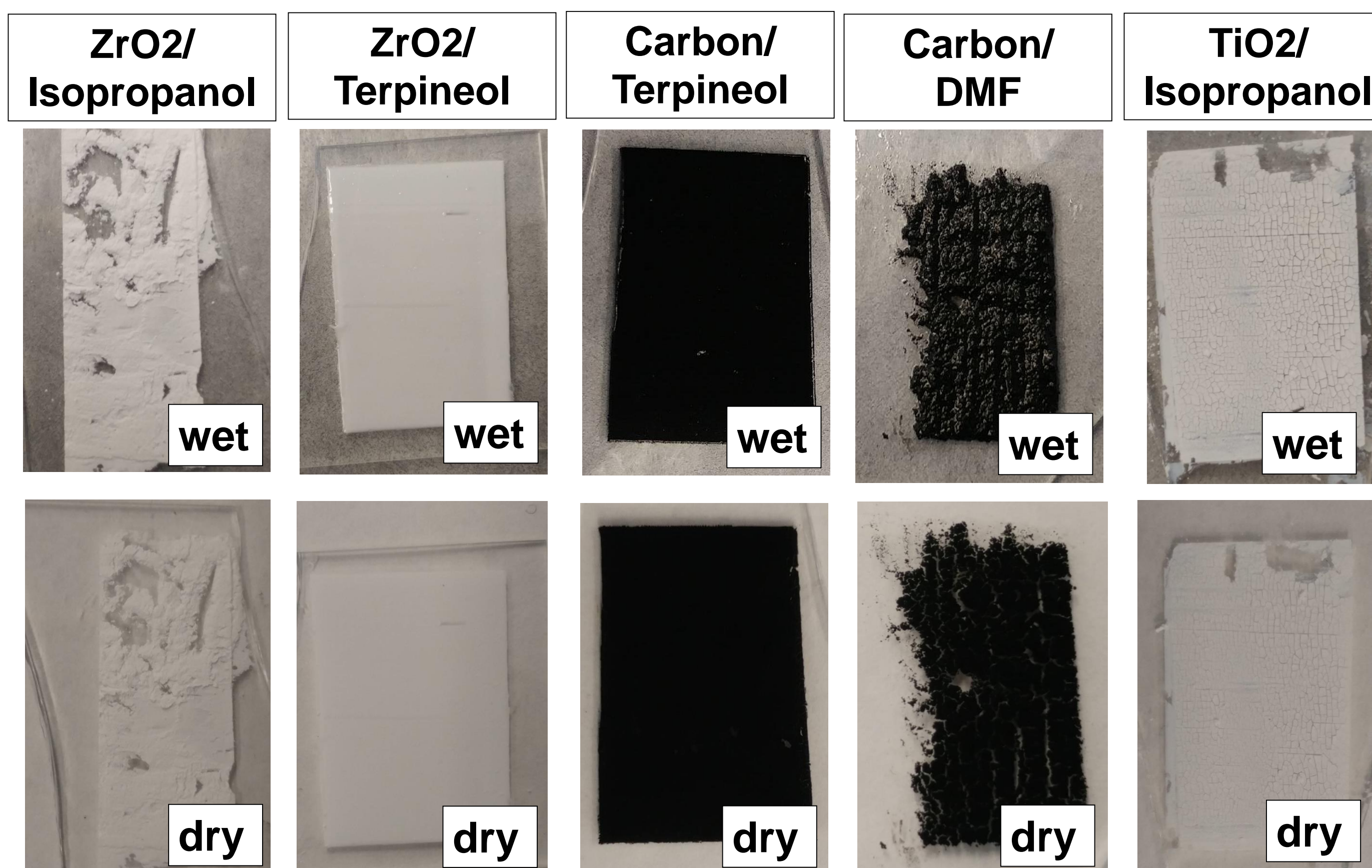
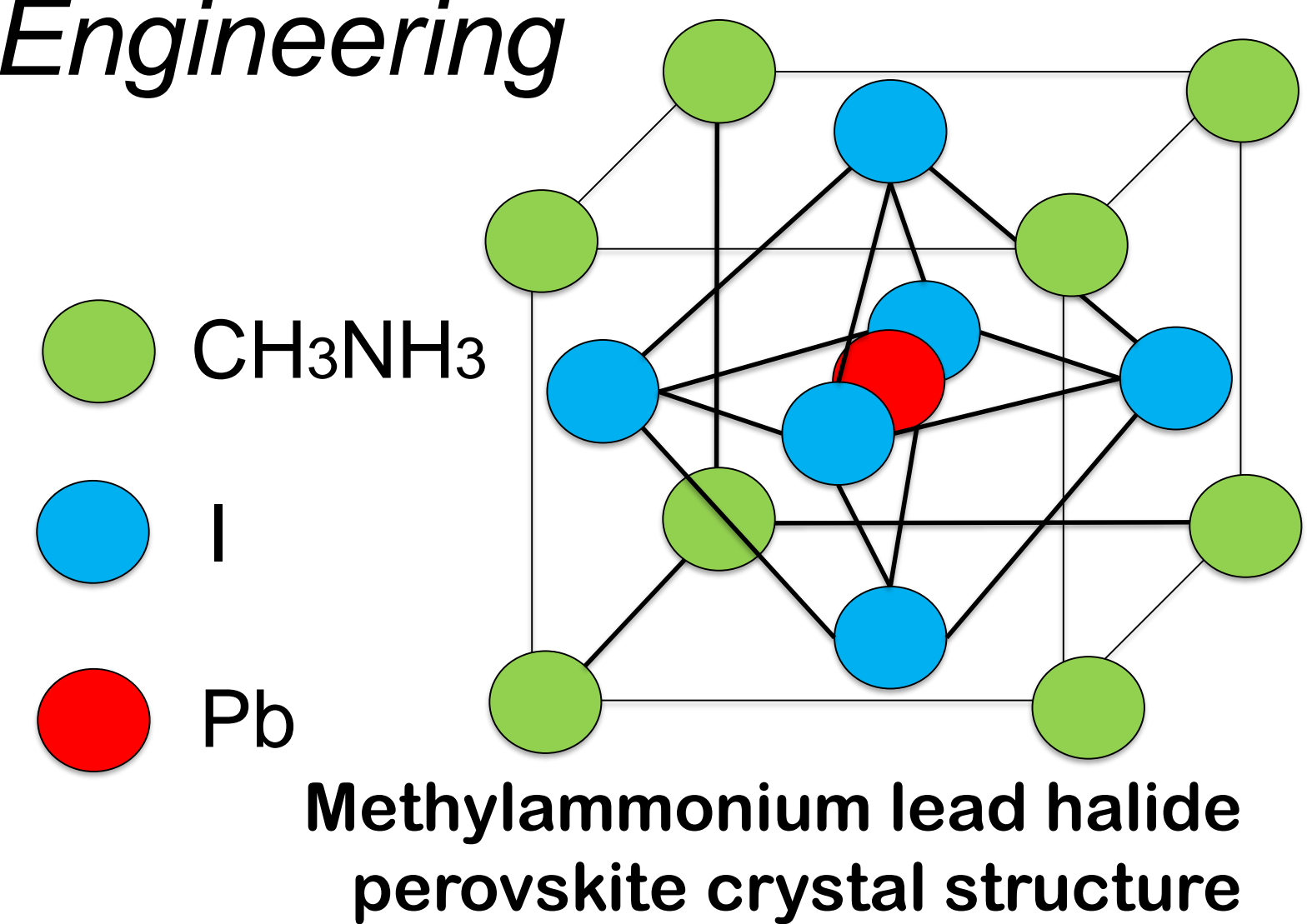


# Investigation of Methylammonium Lead Halide Perovskite Solar Cells

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## Overview

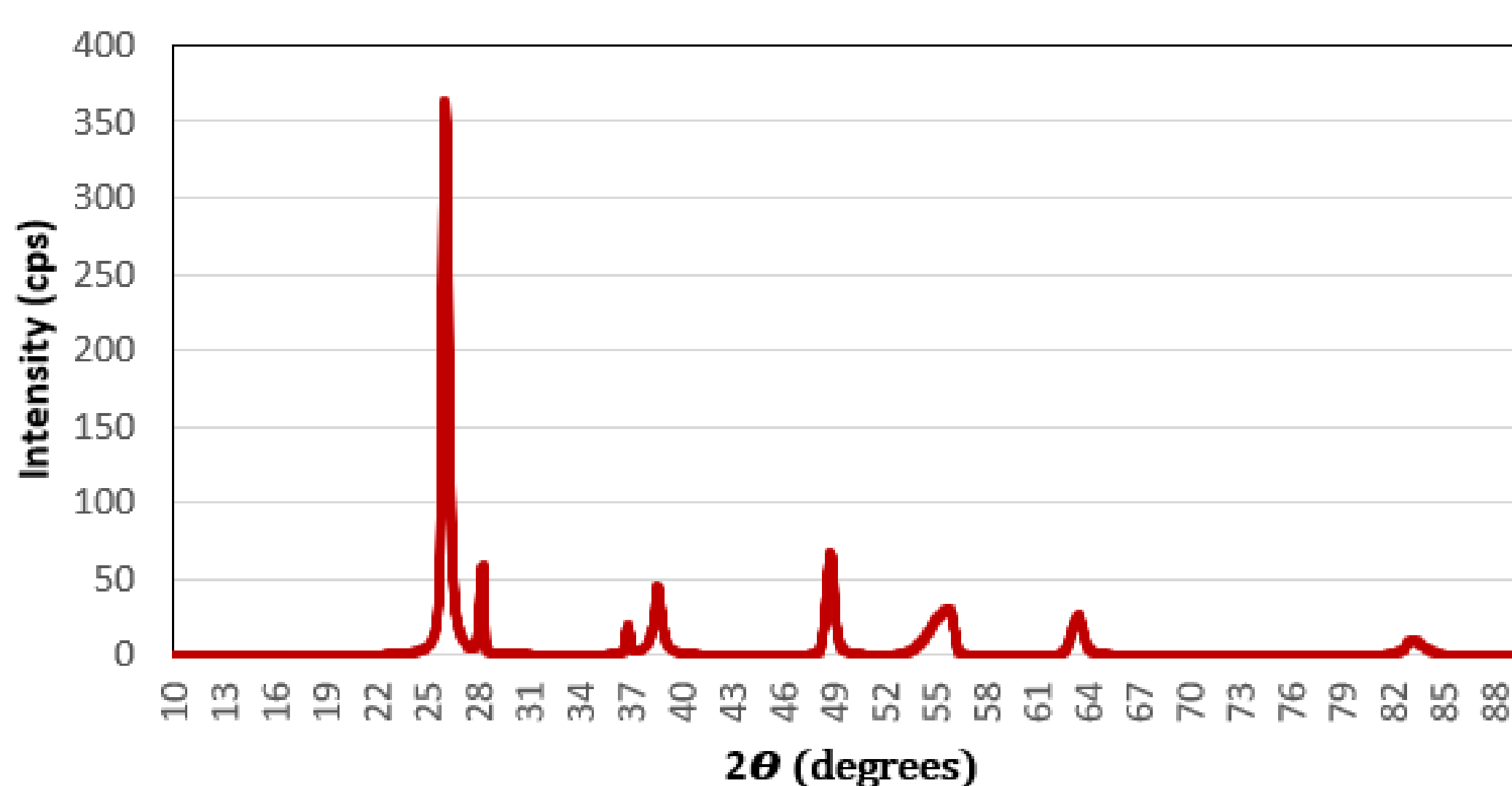
Perovskite solar cells offer promising results for expanding the field of green energy. For inkjet printing a perovskite solar cell, it is important to determine which solvent/powder combination produces the most homogeneous thin film coating using a doctor blading technique. The etching of FTO glass allows energy to be generated from the solar cell via a closed circuit.



## Key Findings

- Terpeneol and DMF solvent slurries resulted in the most uniform thin films for TiO<sub>2</sub> and ZrO<sub>2</sub> powders.
- Isopropanol slurries resulted in flaking thin films and proved difficult to apply.
- Carbon particles exhibited heterogeneous suspension in both the DMF and isopropanol solvents
- The carbon film did not stick to the glass using terpeneol solvent.

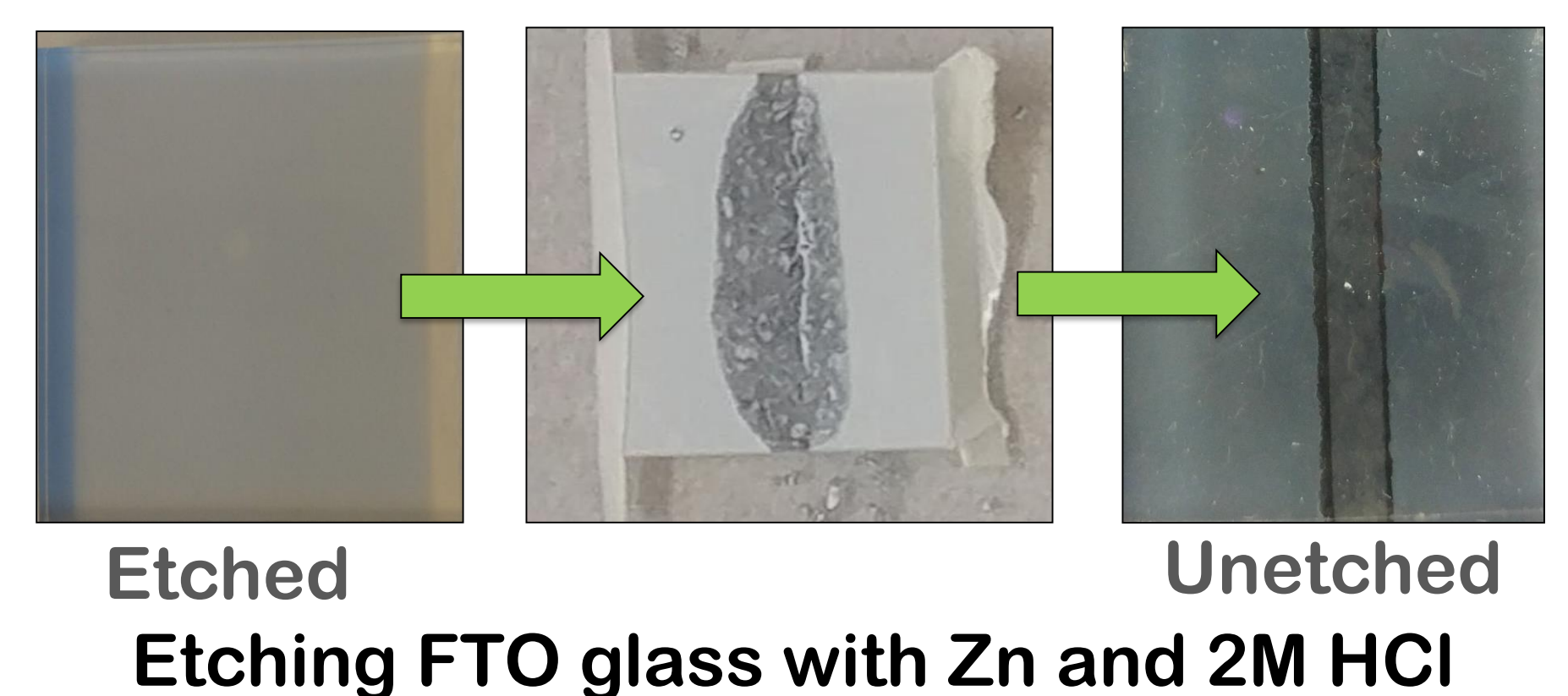
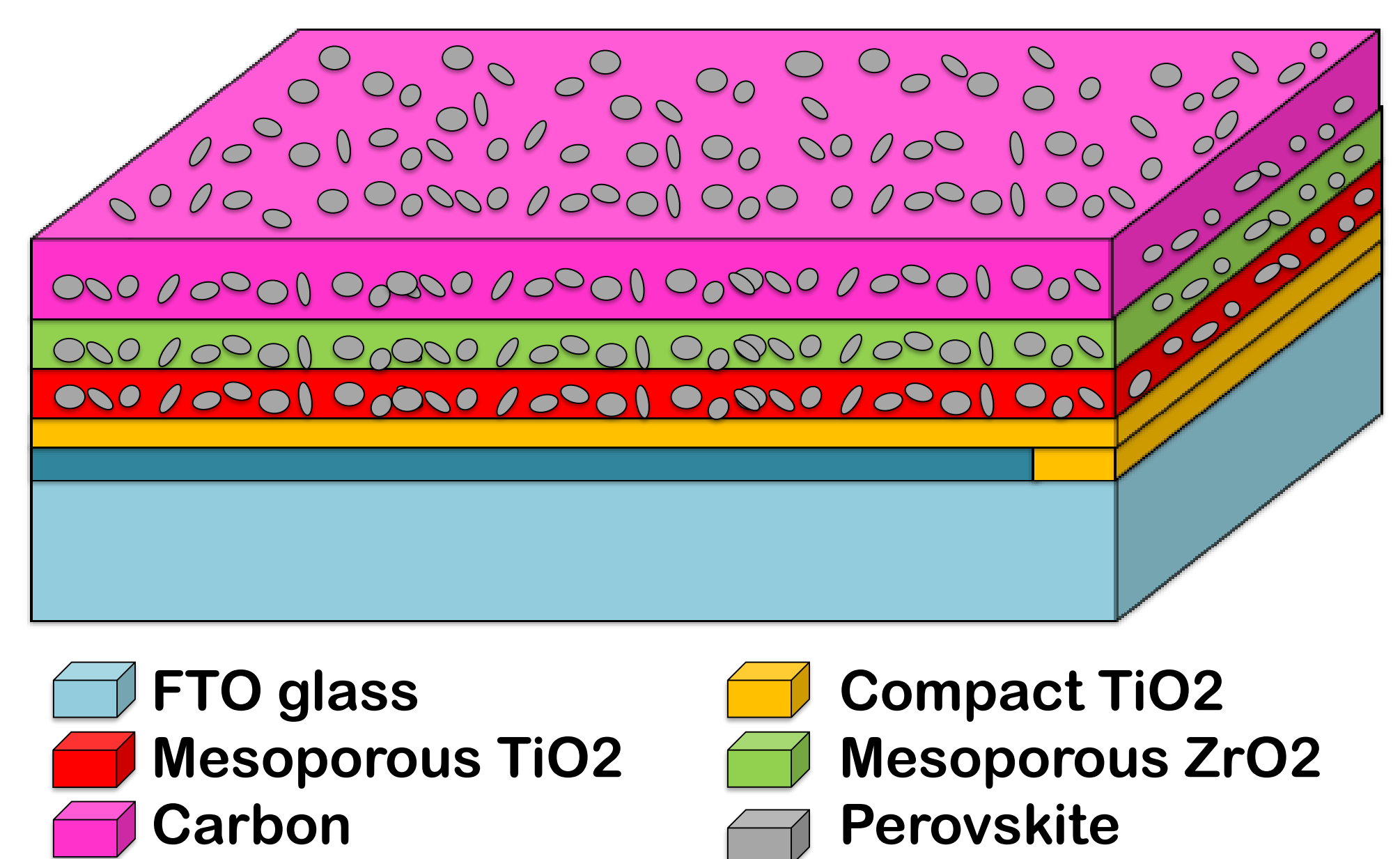
XRD Pattern: TiO<sub>2</sub>-Terpeniol Thin Film



## Explanation/Impact

- The XRD pattern confirms the anatase form of TiO<sub>2</sub> is present on the substrates.
- Resistance values on the FTO confirm Zn powder and 2M HCl successfully removed a portion of the FTO coating.
- This research establishes a foundation for investigating inkjet printing perovskite solar cells and replacing the lead cation with a non-toxic alternative.

Methylammonium lead halide perovskite solar cell



## Acknowledgements

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