# TECHNICAL ASSISTANCE REQUEST

Power Wearables Anytime Anywhere By 3D Additive Manufactured Solar Cells

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At AsterTech, we are developing a low-cost technology which could turn any surface into high-efficiency, light-weight PV solar panels based on direct-write 3D additive manufacturing (AM) of defect-tolerant, inorganic-organic hybrid perovskite materials (**Figure 1**).
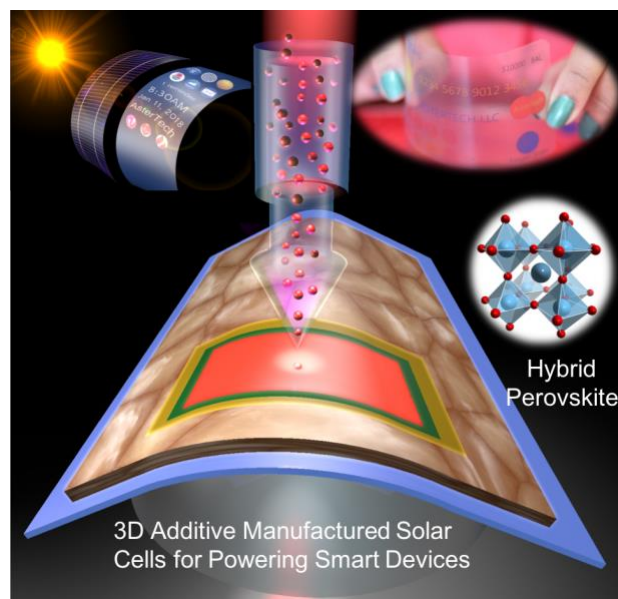

Figure 1: On-demand 3D additive manufacturing of high-efficiency, light-weight solar cell from hybrid perovskite materials for powering smart devices

This seamless fabrication of solar modules directly onto any arbitrary surface is useful in designing innovative wearable and smart internet-of-things (IoT) products as it would facilitate their in-the-field, off-grid operations.

In order to utilize this technology for powering wearable and IoT devices, the following technical milestones need to be achieved:

1) Fabrication of multilayered thin-film PV devices directly on top of flexible printed circuit board by 3D AM process.
2) Serial or parallel interconnection of individual solar cells by the AM process to make modules and arrays.
3) On-the-fly construction, encapsulation, and isolation of electrical components.

In order to bring our concept into market, we have projected the following financial requirements and deliverables:

Figure: Financial Projections & Timeline
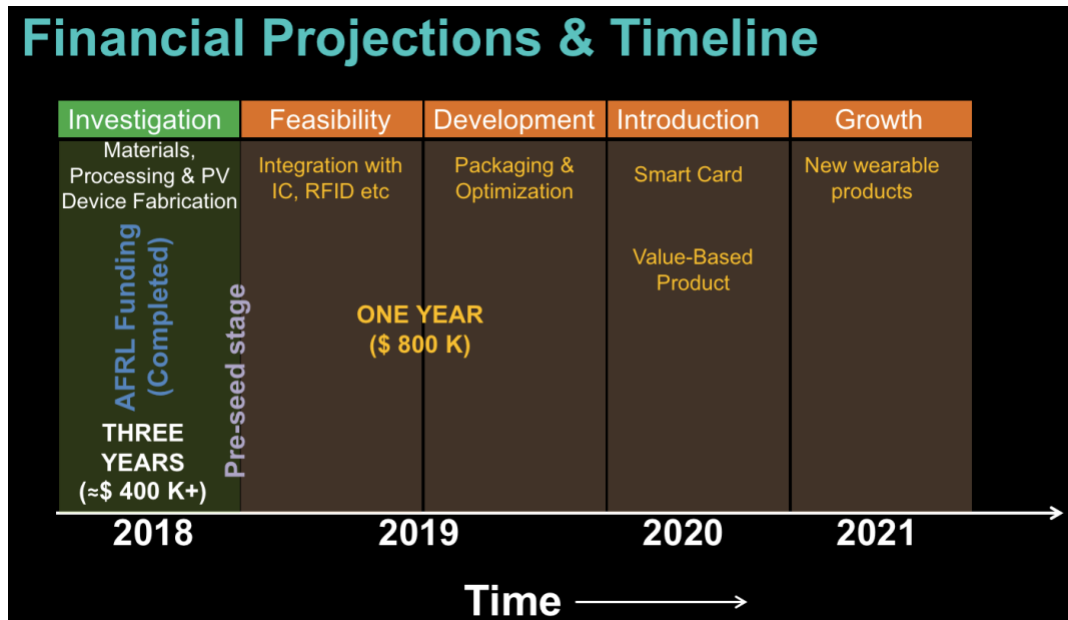
For successful execution of this plan, access to national research facilities like NREL would be highly valuable. Experts from the power electronics sector would also be needed for proper power management of the circuit board. Members of the American-Made Network could further facilitate our technology idea.

We are right now at the pre-seed stage, and we are looking for $0.8M (both from private investors and government funding) for next one year to expand our team and to seed our prototype activities.