Gas blowing for thin film coating deposition

This project consists of the design of a gas blowing mechanism to coat thin films from a chemical solution. The ultimate goal is to couple the mechanism with a new synthesis method for thin film deposition, mainly for hybrid perovskite (organic-inorganic) semiconductor materials, and with a rapid thermal annealing setup based in IR light.\textsuperscript{1-3} The usual way to coat films from solution is through a spin coater, however it is necessary to replace it by straightforward solutions. We propose here a mechanical system based in a gas blow. Once the solution is dropped on top of the substrate, the concept is to implement a rotational mechanism with cavities to blow the gas into the solution and make the film. The Figure 1 below, shows a schematic of the potential mechanism, where the gas pressure can be monitored to control the angular speed of the rotational system. After design the rotational coupled mechanism, others important parameters to consider are the gas-out tube size, tube angle respect to the surface, distribution of the tube across the surface among others. Note hat to make a smooth coating it is important to spread-out the liquid in a homogeneous way, as for example the centrifugal force does it for the spin coating technique.

![Figure 1. Schematic of the gas blow mechanism for thin film deposition from a chemical solution.](image)

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References