## A Mechanical Means to Produce Intense Beams of Slow Molecules Manish Gupta and Dudley Herschbach

Department of Chemistry and Chemical Biology Harvard University, Cambridge, MA 02138

The flow velocity of gas emerging from a supersonic nozzle mounted on a high-speed rotor can be largely canceled by the rotor velocity, thereby producing an intense beam of molecules traveling in vacuum with translational speeds slowed to a few tens of meters/sec. Centrifugal action significantly enhances the supersonic character of the gas flow from the rotating nozzle, further narrowing the spread of velocities in the emerging beam. These features are demonstrated by model calculations and experimental results for beams of Xe, and for  $O_2$  and CH<sub>3</sub>F seeded in Xe.