

# Application for Dust Accelerator Beam Time

(revised 2/17/2014)

The Dust Accelerator at the University of Colorado is available for use by outside groups (within normal scheduling constraints), following approval from the Colorado accelerator team.

To apply for accelerator beam time and to discuss usage costs, please fill out the following form and send it to one of the following contact personnel:

Prof. Tobin Munsat  
390 UCB  
Boulder CO, 80309  
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Prof. Mihaly Horanyi  
390 UCB  
Boulder, CO 80309  
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The purpose of this form is to assess the technical viability of the proposed experiments, and to begin a dialogue with the accelerator team to maximize the productivity of the beam time. All discussions of proposed or ongoing work will be considered confidential.

**Primary contact person (name, address, phone, email):**

**Brief (few sentences) description of experiment:**

**What hardware will you bring to the accelerator? Include a description of targets, in-vessel or outside-vessel instrumentation, data acquisition, etc.**

**What hardware/capability do you require from the accelerator facility? Include target mounting and/or translation details, viewport access, data acquisition details, etc.**

**What dust specifications do you require? Include dust material, grain size(s), impact speed(s), impact counts or rates, aiming precision, etc.**

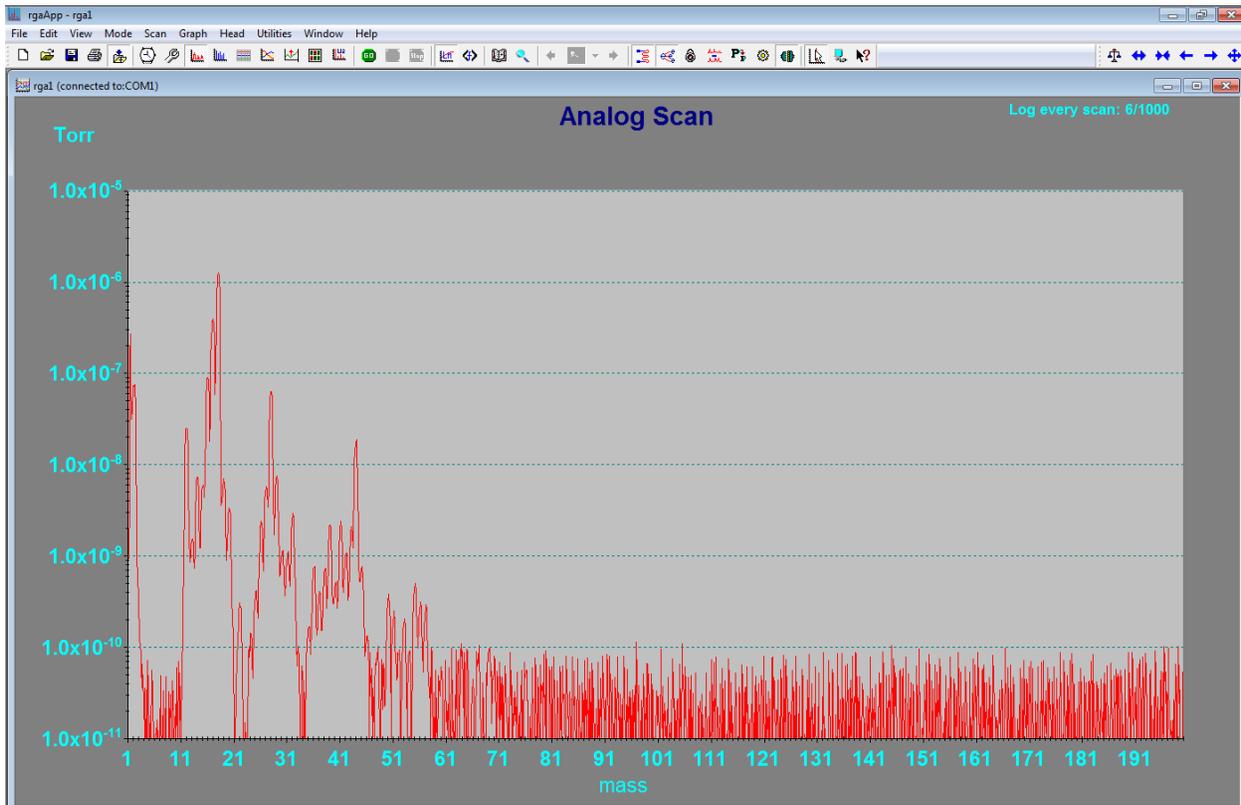
**Describe the vacuum compatibility and/or vacuum requirements of any in-vessel equipment to be used.**

**Describe the measurements that will be made during or after exposure of the target(s) to the dust beam. If measurements of the target surface will be made after the run is over, be sure to include a description of the target surface quality.**

## Notes and guidelines on vacuum cleanliness:

The IMPACT dust accelerator has been kept to a very high standard of cleanliness, for example using entirely oil-free pumping systems throughout. As such, it is important that any experiments placed into the vacuum chambers are fully compatible with these standards.

A typical clean RGA scan of the IMPACT target chamber is shown below:



A highly comprehensive database of outgassing rates for many materials can be found here: <https://outgassing.nasa.gov/>. (Typically "low outgassing" materials have a total mass loss (TML) of 1.0% or less and a collected volatile condensable material (CVCM) of 0.1% or less.)

At the discretion of the IMPACT team, any equipment which is brought to the accelerator may be vacuum tested with an RGA in a separate chamber to determine its vacuum cleanliness before placing it into the accelerator target chamber. Please note: this will take time away from the accelerator run that you are paying for! The standard against which it will be assessed is that no line above 44 AMU should contribute a partial pressure much above  $10^{-10}$  torr in the test chamber. In general, metal objects which have been properly cleaned and subsequently handled with latex/nitrile gloves will easily meet this standard. Plastics and organic materials, even if cleaned, are often more problematic.

In the event that the RGA mass-spectrum of the accelerator target chamber suffers significant degradation during an outside-user experiment, an additional cleaning charge may be assessed.