

CALIFORNIA STATE SCIENCE FAIR 2011 PROJECT SUMMARY

Name(s)	Project Number
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	31576
Project Title	$\langle \rangle$
Blue Sky on Mars? An Analysis of Using Terrene	Filtration Methods
Remove Dust Particles from the Martian Atmosphere	
Remove Dust I al ticles from the Martian Atmosph	
Objectives/Goals Abstract	
The Martian atmosphere is extremely toxic, composed of 99% limonite	particles and 1% magnetite
particles. My project tests two filtration devicesthe N-95 mask and the	Ionic Pro Turboto see if they
can sufficiently remove the dust particles from Mars to the extent that the	e Martian sky would be blue.
Methods/Materials	ah as ha SMDS or Saanning
I tested both the N-95 mask and the Ionic Pro Turbo using equipment su Mobility Particle Sizer, CPC, or Condensation Particle Counter an acom	is and a silica drier. The
atomizer changed the limonite or magnetite solution into air particles the	t could be passed through the
Mobility Particle Sizer, CPC, or Condensation Particle Counter, an atom atomizer changed the limonite or magnetite solution into air particles the drier. The Condensation Particle Counter counted the number of particle	s the size inputted by the
SMPS. I used this device to count the particles before and after using the	filter and used my data to
calculate the efficiency of particles removed.	
Results The N-95 mask was 81.29% efficient in removing the particles, whereas	the Jonie Bro Turbe was 00 00%
efficient.	ule Ionic F10 1 0100 was 99.99%
Conclusions/Discussion	
From analyzing the data I gathered, I concluded that the N-95 mask and	the Ionic Pro Turbo are
From analyzing the data I gathered, I concluded that the N-95 mask and the Ionic Pro Turbo are sufficiently efficient filtration devices to remove dust particles. Assuming an average 81% particle	
filtration and a linear effect of particle number on scattering properties, the reduction of particles in the atmosphere may change the color of the Martian sky to greenish-yellow using the N-95 mask. On the other hand, the Ionic Pro Turbons extremely efficient to remove the thousands of particles on Mars and completely change the scattering. With a rounded 100% efficiency, the almost complete elimination of particles in the atmosphere will change the color of the Martian sky from a red to a blue. From these conclusions, I made the assumption that if the Yonic Pro Turbo, the obviously better filtration device, has the ability to aliminate as more than it is worth trying to use a similar device on Mars.	
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completely change the scattering With a rounder 100% efficiency, the almost complete elimination of	
particles in the atmosphere will change the color of the Martian sky from a red to a blue. From these	
conclusions, I made the assumption that if the lonic Pro Turbo, the obvio	ously better filtration device, has
the ability to eliminate so many particles, then it is worth trying to use a	similar device on Mars.
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Summary Statement	
My project determines whether two earthly filtration proceduresthe N-	
Turbocan efficiently remove dust particles from the Martian atmospher magnetite as the dust found on Mars.	re by representing limonite and
magnetite as the cust radiu on Wars.	
Help Received	
Professor Akua Asa-Awuku at Bournes Engineering at the University of	California, Riverside guided me
with this project, and allowed me to work in her lab and perform the exp	eriments under her supervision.
Xiaochen Tang, a graduate student at UCR, also supervised me in the lab.	