(Research Project Proposal)

"Artificial Rainmaking by using high power laser initiation endothermic reaction, in a way of Natural Lightning Phenomena through Drone air craft remote control system, in the atmosphere"

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Abstract: -

After lightning, precipitation is formed by endothermic reaction and ionization process in the atmosphere, it is well known process. These same natural lighting phenomena occur in the atmosphere by high power laser. We intend to create artificial rain by initiating endothermic reactions in the cloud using high power laser pulse through drone air craft remote control system.

Natural Lightning Phenomena, practically proved in the laboratory, as high power laser induce condensation and also observed NO & O_3 formation after laser shouts in clouds chamber which is endothermic reactions. It is well known that, in the laboratory, high power laser induce condensation and tiny water drops are formed , But can these tiny water particles, be converted in to big size rain drops in the atmosphere ?.....yes!

In the atmosphere ,after lightning ,heavy rain fall occurs .In lightning phenomena condensation takes place by initiating endothermic reactions and tiny water drops formed ,these tiny water drops collide with each other due to acceleration and turbulence by wind force to form big rain drops ,these rain drops act as natural seeding for another sets of rain drops . In this way, chain process occurs with heavy rain fall.

Above lightning phenomena, may be used for artificial rain making by using plasma laser pulse (Technology available in market) in the atmosphere, through Drone air craft's with remote controlled system (Technology available in market).

The advantage of this method is, it is environmentally clean, one time investment so it is economical, can be turned on and off at will, and can be precisely positioned. It will be movable on drone air craft remote control system. Our aim is to create artificial rainfall by high power laser pulse in the atmosphere, at any place, at any time, as per our human need, for green revolution, in the whole world. In this proposal, we are presenting "To Design Artificial Rainmaking by using High power laser initiation endothermic reaction, in a way of Natural Lightning Phenomena Through drone air craft remote control system, in the atmosphere".

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1.0 Introduction: -

Rain plays an important role in world economy by influencing the agriculture yield. But rain is a natural phenomenon, and it does not fall as and when man needs it. Researchers are trying to create artificial rain for the past many years.

Current Technology for Artificial rain making is through cloud seeding: -

In 1946 Langmuir produced clouds in a chamber by cooling air with dry ice and gave the idea that nucleation of water would take place by adding some foreign materials as seeds inside the chamber. This idea is being used for more than 60 years for artificial rain creation by spraying chemicals like silver iodide, calcium chloride and sodium chloride to cold wet air from balloon or aircraft. But the success rate of this method is low. Because in seeding condensation does not take place.

Condensation is the basic need for water drop formation. Example: Take two glasses with clean outer surface one with normal water and another with ice pieces and place them on a table in winter season. After sometime you can observe water droplets on the outer surface of the glass which contains ice but not in the other. This is due to the condensation process that occurred in that ice glass without any seeding. Hence condensation is the basic need for the water drop formation. When natural rainfall occurs in the atmosphere there would not be any seeding process takes place.

Seeding process was used only for cold rainy clouds but our process will be used for warm white cloud. In our process, condescension is by endothermic reactions. We have proved this in our Laboratory. Seeding process is expensive and harmful to mankind because it brings harmful chemicals on earth along with rain.

2.0 Natural Evidences: -

Our method, actually, emulate rain formation mechanism in nature after lightning. On several occasions it has been found that precipitation follows after lightning. Golde (1977) from a number of radar observations has reported that intense precipitation is not even present in the clouds before the first discharge but it develops abruptly in the same region after discharge from which the lightning flashes originate. Battan (1981) has observed very rapid growth of precipitation particles/ice crystals caused by electrical forces following a lightning discharge. In many cases the on-set of strong electrification follows the appearance of heavy precipitation within the cloud in the form of hail stones (Wallance and Hobbs, 1977). The correlation between lightning and precipitation is as follows: heavy gushes of rain or hail often reach the ground in 2-3 min. after the lightning flash and it is evidenced that lightning is the cause rather than the result of the rapid intensification of the precipitation (Mason, 1975). It is further speculated that the rapid intensification of the precipitation from about 1mm/h to 50mm/h in this 2-3 min period is brought about by a greatly accelerated rate of coalescence of water drops under the influence of electrical forces by a mechanism that is obscure and has no convincing experimental or theoretical base (Mason, 1971). From the above work it is clear that precipitation is formed after lightning.

In lightning, temperature rises as high as 30,000K in fraction of a second. At this high temperature both dissociation and ionization of N_2 and O_2 as showed in reactions (1), (2), (3) and (4) take place as fallow. But for the formation of precipitation, a temperature as low as (-10K) is needed. How a region which rose to a temperature of ~30,000K attains a temperature of (-10K)? Who removes the heat? That means after lightning, some mechanism occurs which cool the medium. The mechanism is occurrence of endothermic reactions (5) and (6) which cool the atmosphere. This cooling will create CCN (clouds condensation nuclei) in cloud and produce tiny water droplets in the atmosphere. These tiny water droplets then will act as natural seed for the formation of rain drops in the atmosphere (Drake 2006).

3.0 Theory: -

We intend to create artificial rain by initiating endothermic reactions in the cloud using a high power laser pulse through drone air craft remote control system. The advantage of this method is, it is environmentally clean, one time investment, can be turned on and off at will, and can be precisely positioned and cover a cloudy wide area according to atmospheric condition.

When a laser pulse of wavelength, λ and energy, $h\nu$ ($\nu = 1/\lambda$ and h is Planck's constant) is shot in the atmosphere, depending on the value of its energy, it can dissociate (break the bonds of) Nitrogen (N_2) and Oxygen (O_2) (which are the two major gases in the atmosphere) and ionize them as follows:

Dissociate:

$$\mathbf{N_2 + h\nu \rightarrow N^* + N} \qquad \textbf{…….. (1)}$$

$$\mathbf{O_2 + h\nu \rightarrow O^* + O} \qquad \textbf{…….. (2)}$$

Ionize:

$N_2 + h\nu \rightarrow N_2^+ + e^-$ …….. (3)

$O_2 + h\nu \rightarrow O_2^+ + e^-$ …….. (4)

Energy required to dissociate 1 molecule of N_2 and 1 molecule of O_2
= 2.25×10^{-18} Joule.
Energy required to ionize 1 molecule of N_2 and 1 molecule of O_2
= 4.44×10^{-18} Joule.
(Calculation has been shown in the Appendix.)

Hence the energy required to dissociate 1 molecule of N_2 and 1 molecule of O_2 is about half of that required to ionize them. Therefore, when a laser pulse is shot in the atmosphere, it will first dissociate N_2 and O_2 and if energy still remains then it will ionize them.

After bond breaking (dissociation, reactions 1 and 2), two atoms of N_2 (N^*, N) and two atoms of O_2 (O^*, O) are formed. Among them atoms N^* and O^* are in excited state and hence are unstable. They immediately react with some gases to come to ground state and form stable NO and O_3 as follows:

$N^* + O_2 + \Delta H$ (43.2 kcal/mol) $\rightarrow NO + O$ ……. (5)

$O^* + O_2 + N_2 + \Delta H$ (67.6 kcal/mol) $\rightarrow O_3 + N_2$ ……. (6)

Both reactions (5) and (6) are endothermic and absorb a large amount of heat (43.2 + 67.6 = 110.8 kcal/mol) from the surrounding air. As a result, the air becomes cooled below the condensation temperature and fine water particles are formed, cloud seeding takes place and it rains. Recently Kasparian group has detected formation of NO and O_3 after laser beam shooting.

There is another possibility. In reactions (3) and (4), positive ions, N_2^+ and O_2^+ and electrons, e^- is formed. Positive ions, N_2^+ and O_2^+ will quickly react with water molecules and form big ions like $H^+(H_2O)_n$ etc and electrons, e^- will quickly react with many gases to form big negative ions like $NO_3^-(H_2O)_n$ etc. The value of "n" could be as large as 25. These big positive and negative ions may act as seed and create rain.

4.0 Practical Evidences:

Latest Work done: -

Carls and Brock (1987) did an experiment in which atmosphere was heated by a laser pulse up to 1600 to 2800 K. They observed water droplet formation in the atmosphere. They postulated that water droplets were formed by ionization process. This is partly true because they did not consider dissociation and the occurrence of endothermic reactions, which are responsible for cooling and capable of CCN formation. Again in the conclusion of the said paper, he predicted that the air is shock heated to temperatures high enough to cause ionization. If the ionized air is subjected to more radiation, avalanche breakdown of the air can occur. This is similar to breaking of N_2 and O_2 molecules because air contains 77% N_2 and 23% O_2, which is responsible for endothermic reaction and condensation takes place. Our simulation substantiates the theory that shock heating of air can be at least partly responsible for aerosol-enhanced breakdown.

In the laboratory, we did an experiment in a chamber where lightning was created by a high voltage electric spark. We noticed formation of water droplets on the surface of the chamber. The results have been published (Chopkar and Chakrabarty 2008, Chopkar et al. 2010).

Rohwetter et al. (2010) have shown that ionized filaments (like a cable) generated by ultra-short wave (Visible, Infra Red region) laser pulses are able to induce water-cloud condensation in the sub-saturated atmosphere in the altitude region between 45 and 75m resulting in rain.

Yoshihara et al. (2007) have shown that the pulsed UV-laser irradiation of ambient air induces the formation of water droplets or small ice particles in the laboratory. They also observed that the atomic oxygen which is formed in this process quickly reacts with oxygen molecules to form ozone. In their experiment ozone is formed due to endothermic process by which condensation takes place and CN (condensation nuclei) is formed which produces water droplets or ice crystals.

It may be mentioned here that a group at Indian Institute of Tropical Meteorology, Pune who is experimenting with lieder, has also observed that a few drops of water fall after the laser beam is shot in the atmosphere.

Recently, in U.S.A. at the University of Central Florida in Orlando, Development of this technology (Laser makes rain) was supported by a $7.5 million grant from the U.S. Department of Defense. During a rainstorm, particles inside a cloud build up static electricity and release it as lightning. Meanwhile, tiny water droplets stick together until they are heavy enough to fall to the ground. Scientists want to recreate this process with lasers to produce rain when and where it is needed (Inside Science TV).

Teams of scientists from Switzerland and Germany have been trying to create artificial rain by using laser. In 2011, they succeeded to produce tiny water particles in moderately humid air. But the droplets were about a hundred times too small to fall as raindrop; instead, they remained suspended in the air. But the team believes that it is feasible to get larger droplets. In the 2011 experiment, they used a 100 terawatt ($1tw=10^{12}$ watts) laser and a mobile laser of size of a shipping container of 5 terawatts. Their conclusions were:

1. If the power of laser is increased to petawatt (10^{15} watts) or exawatt(10^{18} watts) level it is possible to create larger water droplets. These powerful lasers are commercially available.
2. In the atmosphere ,after lightning ,heavy rain fall occurs .In lightning phenomena condensation takes place by initiating endothermic reactions and tiny water drops formed ,these tiny water drops collide with each other due to acceleration and turbulence by wind force ,to form big rain drops.

   .These rain drops act as natural seeding for another sets of rain drops. In this way, chain process occurs with heavy rain fall.

3. Above lightning phenomena, may be used for artificial rain making by using plasma laser pulse (Technology available in market)in the atmosphere, through Drone air craft's with remote controlled system (Technology available in market).

5.0 Methodology:

A. The methodology to be adopted here has been described in several of our research papers. See for example "Artificial rain making by laser system" published in International Journal of Meteorology, (UK), Nov. 2010, vol. 35, No. 355, pp. 363-370, www.ijmet.org.
B. Above phenomena may be used for artificial rainmaking in the atmosphere by using plasma laser pulse (technology easily available in market), fixed in Drone air Craft system which is controlled by remote control from ground level.

Fig No 1 (A):- Demonstration for artificial rainmaking by plasma laser pulse through drone air craft remote control system.

C. UAV's (Unmanned Ariel Vehicle)

Many UAV systems had been developed and exploited for various purposes of Cartography and Monitoring. Most of the UAV systems are made by research Institutes and public Institutions.

UAV systems which are used for Monitoring and Cartography in Agricultural, Forestry and Environmental conditions. The Mega UAV offers images on demand and is an inexpensive alternative to satellite or flying an airplane over a field. The Mega UAV is highly efficient and user friendly for the commercial market. It is a radio control (RC) glider plane equipped with a Pen tax digital camera, controlled by an autopilot, along with pre-programmed ground control software. Available in electric, the Mega UAV will also work with a RC transmitter for manual control of the plane.

D. Why? Drone (UAV'S) System proposed in the Atmospheric Clouds For Rain Making by Laser

Recently in Florida University, USA, 7.5 million dollar has been sanctioned for developing this novel technology (rain making by laser). In Florida University; Scientist group has been using with double laser (primary & secondary) for increasing range and power of laser which is sending in upper clouds from the ground. It is good idea, but as per our knowledge, such type of laser cannot penetrate to

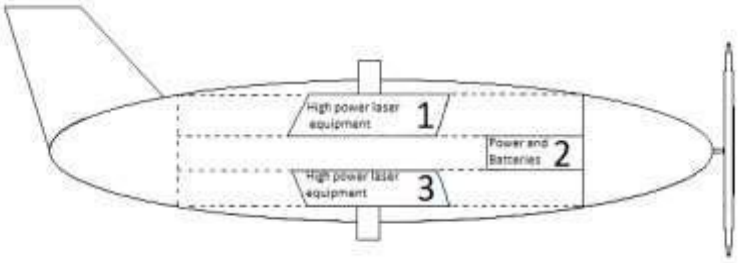
the mass of cloud's density ;laser is one of the type of light ray .That's way in our project proposal , there are used Drone (UAV'S) system which is directly goes inner of the cloud's mass density and released single high power laser in the atmospheric clouds .

Another important factor; natural lighting may be comes through laser on ground in double laser system which is sending from ground but in Drone system natural lighting does not come through laser on ground and no any damages of human life .Otherwise, it's very dangers and harmful to scientist and workmen etc. So in this project proposal, there is used Drone system which is suitable and not harmful to us. Drone technology is easily available in market. In future, satellite system (shown in Fig No. 3) may be used; it is one time investment, economical, eco- friendly and on/ off by remote control by satellite. One more benefit ; Drone system may be creates acceleration and turbulence by wind force in the atmospheric clouds and tiny water particles of precipitation collide to each other and comes together to form big rain drops which is act as natural seeding to form another sets of rain drops and rain occurs .

E. Drone air craft fixed the camera and the quad copter by which we can measure the atmospheric parameters when sent to the atmosphere from ground. With plasma Laser pulse instruments system as shown in Fig. No. 1(B)

Fig no 1 (B):- Drone with plasma laser pulse & atmospheric parameters measuring camera quad copter remote control instrument from ground.

F. Design for drone aircraft with LASER system fixing.



***Design for drone aircraft with LASER system fixing*.**

Inner space for LASER equipment system in drone aircraft (G+1) – 8.4x4.5x4.5

a) Size of room in ground floor – 8.5x4.5x2.7

In ground floor there are LASER units – 2 Nos. as per shown in diagram

b) Plan for first floor:

Size of room in first floor – 8.5x4.5x1.8

In first floor there are high powered energy supply unit fixing and batteries and other unit fixing.

In the above diagram item no 1 and 3 are LASER Emitting Devices to control atmospheric clouds for rain making. This is a double LASER unit based at ground floor of the drone. Item no 2 shown in diagram covers entire 1st floor and consists of all the electrical appliances power generating unit and LiPo Batteries along with control station.

6.0 Laser project with UAV's

High Power Plasma laser Pulse Technology machinery with High Power supply set up in Drone aircraft which will be also remote control system machinery set up. The Hybrid Mega UAV will fly Deploy as per requirement. It is a Tactical Multicolor Drone equipped with diesel engine and charger alternator that keeps battery full at all time, supporting up to 48 hours of autonomy. The battery mode at full power can make it fly for 3 hours majorly used for return to base on override and critical conditions.

Description	***Angel Rainer***
Wing Span	11.03 m
UAV Length	7.1 m
Takeoff Weight	2100 kg
Engine	Electric motor engine , Four cylinders 115 hp 86 kw
Batteries	LiPo cells
UAV Flight Speed	100 km/h with Maximum load of 1100 kg.
Telemetry & command Data link	433 MGz radio, range is 80 km
Max Altitude	3 000 m
Endurance	3 hours maximum
Launch	Road taxi runway 150 feet
Recovery	Auto Return to base at minimum critical battery.
Control	Automatic
UAV Lifetime	5000 flights

International draft plan to UAV regulation, Official Registration and Aircraft Certificate is required

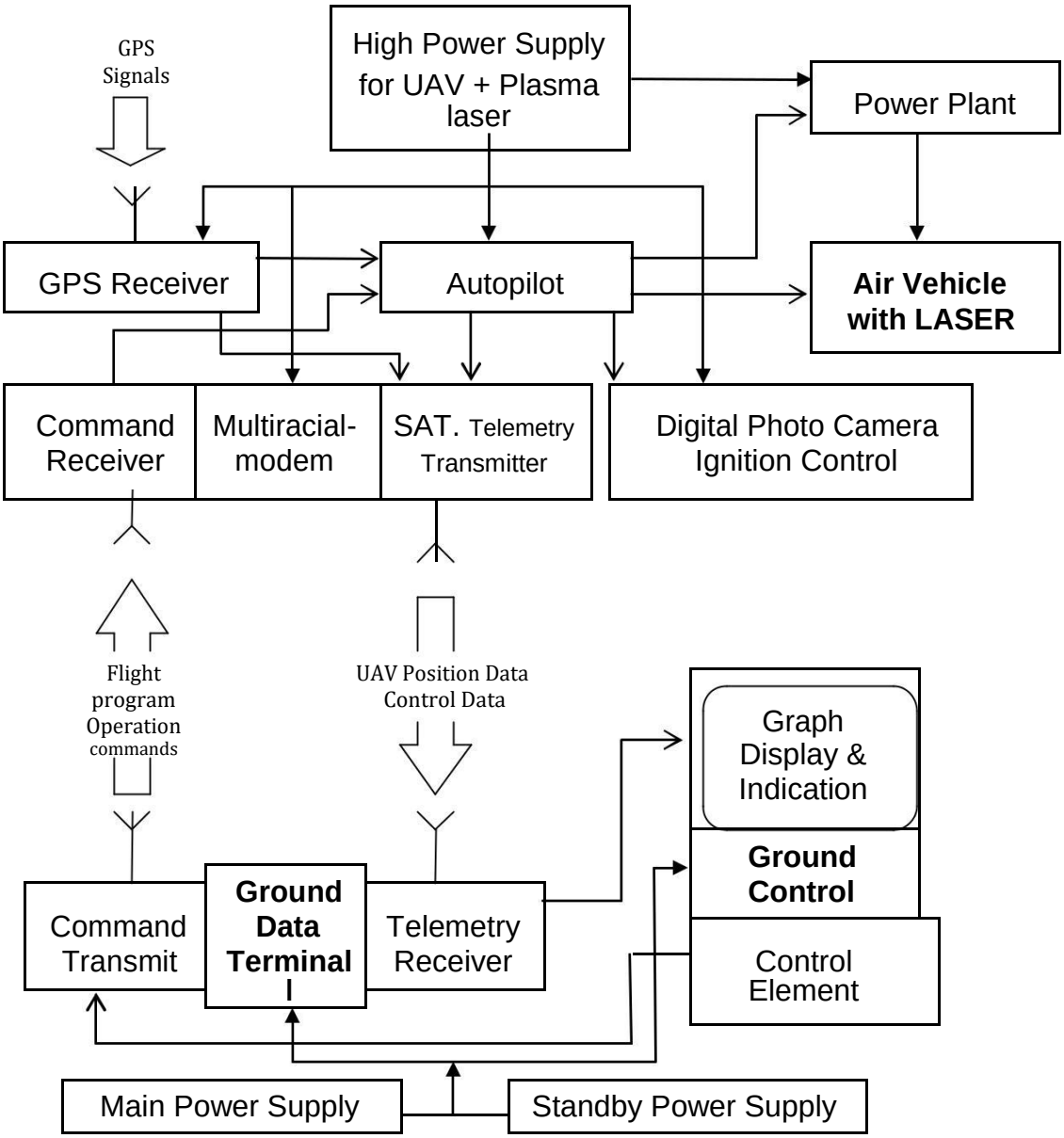


Fig No. 2 "Angel Rainer" UAV System Design Diagram

6.1 HOW TO OPERATE THIS TECHNOLOGY IN THE ATMOSPHERE

Two drone air craft's with high power laser are used in this operation. At first one drone goes up in the atmosphere and will release two to six high power laser pulses in the upper atmospheric clouds. When the fuel in the first drone is consumed it will come down to the ground and the second drone will go up in the atmosphere with fuel and will release two to six high power laser pulses in the atmospheric clouds until the fuel in this becomes low. After that the first drone will again go to the atmosphere with fuel and will do the same. Likewise High power laser pulses will be released into the atmosphere continuously until the artificial rain occurs in the atmosphere.

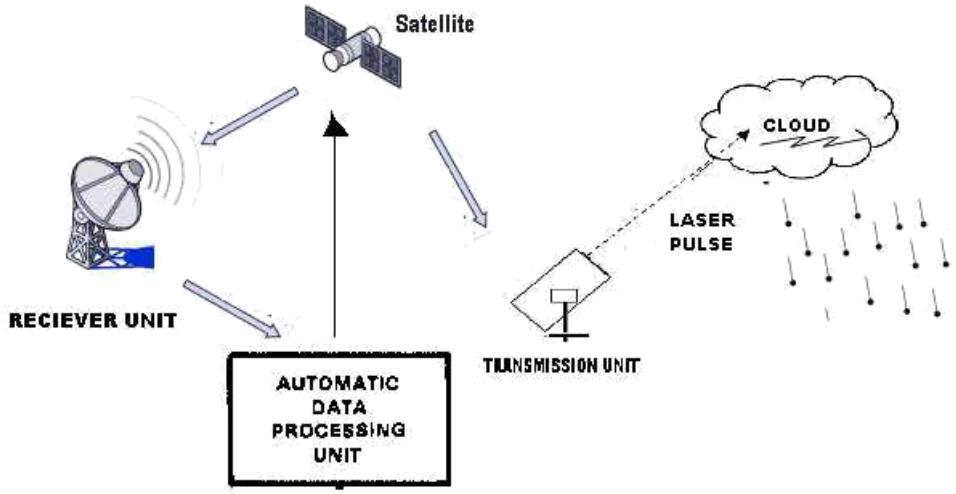


Fig No.3: Future plan for artificial rainmaking by high power laser pulse through transmission unit from ground and control system by satellite

7. 0 Artificial Rain Making System Design Experiment

1. Recording of atmospheric parameters

Measurement of atmospheric parameters like percentage of humidity, temperature, and pressure and wind velocity at different height before and after sending the laser pulse will be done by weather forecasting system or satellite receiving systems.

Data to be recorded (before and after passing laser pulse)

Date :: …… Day :: ……. Time:: …….AM ……..PM Location :: ……..

INTENSITY OF LASER BEAM= ----- J (wave length λ, nm)

Sr. No.	Heights (mts)	% of Humidity		Wind Velocity		% liquid water content		Temperature		Pressure	
		Before	after	Before	after	Before	after	Before	after	Before	After
1	100										
2	200										
3	300										
4	400										
5	500										
6	Average										

In this way we will record the above parameters by sending a laser of particular wavelength and then we will vary the wavelength of laser Pulse and record the same parameters so that we will get the data for ready reference for artificial rain making at that particular place.

2. ***Observation of cloud condensation and precipitation formation***

We will record videos and pictures of cloud condensation and precipitation by cameras before, during and after laser induced precipitation.

3***. Measuring liquid water content in the cloud***

Liquid water content in the clouds will be measured by sending quad-opted at various heights (remote controlled from the ground).

4. ***Laser experiment***

After recording atmospheric parameters and water content of the clouds on any given day at a particular date, time and location; we will start our experiment by sending different wavelength of lasers and recording the resulting precipitation using rain gauge.

For example, on a given day after recording percentage of humidity, temperature, and pressure and wind velocity; we will send laser pulse of various intensity and different wavelengths and note the resulting precipitation. We will get the following information:

INTENSITY OF LASER
BEAM= ----- nm (wave length λ)

Sr. No.	Horizontal distance of rain gauge station from laser instrument in Meter	Rain fall in mm
1	200	
2	400	
3	600	
4	800	
5	1000	
6	1200	
7	1400	
8	1600	
Average Rain fall in (mm)		

In this way we will record the above various parameters by passing a laser pulse of particular wavelength and then we will vary the wavelength of laser Pulse and will record the average rain fall at different rain gauge stations so that we can get the optimum value of wavelength and intensity of the laser Pulse which will give the maximum average rain fall.

8. Analysis

At any given level of humidity range, we will have the data of laser intensity (wavelength) versus % of water drop formation. After calculating optimum laser intensity at a given humidity range, we will analyze the relationship between humidity range and optimal wavelength to cause precipitation at that humidity range. This reading will help us design the final laser induced rain making system optimized to cause maximum possible rainfall at a given level of humidity

9 .0 Conclusions: -

a) **Natural Lightning Phenomena, practically proved in the laboratory, as high power laser induce condensation and also observed NO & O_3 formation after laser shouts in clouds chamber which is endothermic reactions. It is well known that, in the laboratory, high power laser induce condensation and tiny water drops are formed , But can these tiny water particles, be converted in to big size rain drops in the atmosphere ?.....yes! –**

b) **In the atmosphere, after lightning, heavy rain fall occur. In lightning phenomena condensation takes place by initiating endothermic reactions and tiny water drops formed these tiny water drops collide with each other due to acceleration and turbulence by wind force to form big rain drops, these rain drops act as natural seeding for another sets of rain drops . In this way, chain process occurs with heavy rain fall.**

c) **Now it is clear that the water drops formed after lightning/Laser is due to condensation by endothermic reaction' these natural lighting phenomena can be used for artificial rainmaking by using high power laser through drone air craft control system in the atmosphere.**

d) **If the power of laser is increased to petawatt (10^{15} watts) or exawatt (10^{18} watts) level it is possible to create larger water droplets. These powerful lasers are commercially available.**

e) **After sending high power laser pulse through drone air craft remote control system. We intend to create water rain drops by initiating endothermic reactions in the parcel cloud these new raindrops will again act as natural seeding. In this way, chain process occurs to give maximum artificial rainfall, which will be commercially used for domestic and industrial purposes.**

f) **If materializes, our future plan is to fixed data in the computer software and providing same to satellite (Fig.3) for causing maximum rain fall at any place, at any time, as per our human need, for green revolution, in the whole world.**

g) **This process is economical, harmfulness, eco-friendly and can be switched on and off by remote control from the ground. It is most useful for human being, particularly for farmers. Hence suicides of farmers can be stopped.**

h) **One additional use of this process is that the excess rainfall may be stopped by the same drone system by releasing low intensity laser into the clouds in the atmosphere during excess rainfall which will make the excess rain clouds to evaporate and will make them disappear from the excess rainfall area.**

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11.0 APPENDIX: -

The energy of a laser beam of wavelength λ is $h\nu$ ($\nu = 1/\lambda$ and h is Planck's constant). We will shoot laser pulse in the atmosphere and dissociate (break bonds of) N_2 and O_2 as follows:

$N_2 + h\nu \rightarrow N^* + N$ (1)

$O_2 + h\nu \rightarrow O^* + O$ (2)

Bond energy of N_2 = 226 kcal/mole.
1 cal = 4.184 Joule, Avogadro number = $6x10^{23}$
Therefore energy required to break 1 molecule of $N_2 = 226x10^3x4.184/(6x10^{23}) = 1.58x10^{-18}$ Joule. Bond energy of O_2 = 96 kcal/mole.
Therefore energy required to break 1 molecule of $O_2 = 96x10^3x4.184/ (6x10^{23}) = 0.67x10^{-18}$ Joule.
So the total energy required for breaking 1 molecule of N_2 and 1 molecule of O_2 will be $(1.58x10^{-18} + 0.67x10^{-18}) = 2.25x10^{-18}$ Joule.

When a laser pulse is shot in the atmosphere, it may ionize N_2 and O_2 as follows:

$N_2 + h\nu \rightarrow N_2^+ + e^-$ …….. (3)
$O_2 + h\nu \rightarrow O_2^+ + e^-$ …….. (4)

Ionizing potential of N_2 = 15.58 ev = $2.49x10^{-18}$Joule Ionizing potential of O_2 = 12.2 ev = $1.95x10^{-18}$Joule.
So the total energy required to ionize 1 molecule of N_2 and 1 molecule of O_2 is $2.49x10^{-18}$Joule +$1.95x10^{-18}$Joule = $4.44x10^{-18}$ Joule.
The above calculation shows that the energy required to dissociate 1 molecule of N_2 and 1 molecule of O_2 is about half of that required to ionize them

12 Flow chart for Novel Technology to create artificial rain making by plasma Laser pulse in a way of Natural lightning phenomena.

*** It is well known that after lightning precipitation is formed and heavy rainfall occurs. These Lightning phenomena cause by endothermic reactions**

↓

- **Lightning creates high temperature; at high temperature bonds of Nitrogen N_2 (78%) and Oxygen O_2 (21%) break out into excide N* and excide O*.**

↓

- **These excide N* and excide O* react to each other and NO and O_3 are formed.**
  $N_2 + O_2 \rightarrow$ 2NO - ΔH (43.2kCal/mol)
  $O_2 + O^* \rightarrow$ O_3- ΔH (67.7kCal/mol)

↓

- **After NO and O_3 formation endothermic reactions take place. In these endothermic reactions large amount of heat energy is absorbed from the surrounding atmospheric clouds. Condensation take place in the atmosphere .Condensation is the basic need for water drops formation.**

↓

- **After that Condensation takes place and precipitation is formed with heavy rainfall after lightning. It is a well-known process in the atmosphere.**

↓

- **These natural lightning phenomena will be used for artificial rainmaking by using plasma laser pulse initiating endothermic reactions in a way of natural lightning phenomena in the atmosphere.**

↓

- **These natural lightning phenomena were practically proved in the laboratory as well as in the Atmosphere up to 30m height.**

↓

- **These natural lightning phenomena were practically proved in the laboratory as High power laser induce condensation and observed NO & O_3 formation after laser shouts; which are endothermic reactions.**

↓

- **High power laser induce condensation and tiny water drops are formed practically in the laboratory experiment.**

↓

- **These tiny water drop particles are converted into rain drops by acceleration and turbulence due to wind force in the atmosphere.**

↓

- **In foreign countries above technology is practically proved and successfully experimented and is known as "Laser makes rain".**

↓

- **Recently in Florida University, USA, 7.5million dollar was sanctioned for developing this novel technology.**

↓

- **In India, we would like to start" International Rainmaking Research Centre" for development of this technology under Government of India.**

↓

↓

- **Project proposal is ready "To design artificial rainmaking system by plasma laser pulse initiating endothermic reactions in a way of natural lightning phenomena through Drone Aircraft remote control in the atmosphere.**

↓

- **This process is economical, harmfulness and eco-friendly and can be switched on and off by remote control from the ground. It is most useful for human being, particularly for farmers. Hence suicides of farmers can be stopped.**

↓

- **Please search on Google web as "Artificial Rainmaking by Endothermic reactions".**

↓

- **This technology is awarded National and International patent. Our research paper has been published in National and International Journal.**

↓

- **Refer publish research paper "Artificial Rainmaking system" in international journal of meteorology www.ijmet.org and other national and international publication research papers also.**

↓

- **Our aim "When and where, artificial rain making as per human needs for Green revolution in the whole world".**

↓

- **One additional use of this process is that the excess rainfall may be stopped by the same drone system by releasing low intensity laser into the clouds in the atmosphere during excess rainfall which will make the excess rain clouds to evaporate and will make them disappear from the excess rainfall area.**

Budget for the Project proposal

"To Design Artificial Rainmaking by using High power laser initiation endothermic reaction, in a way of Natural Lightning Phenomena Through drone air craft remote control system, in the atmosphere

BUDGET ESTIMATES :(Rs in Lack) (A+B+C+D +E)

Sr. No	Items	Budget			
		1st Year	2nd Year	3rd Year	Total
1	Salaries / wages	67.80	67.80	67.80	203.40 lack
2	Equipment	3840	0	0	3840 lack
3	Consumables	130	90	90	310 lack
4	Travel	190	110	110	410 lack
5	Contingencies	20	20	20	60 lack
6	Patent file & consultant fees	125	45	45	215 Lack
7	Overhead expenses	30	30	30	90 lack
	Total	4402.8lack	362.80 lack	362.80 lack	5128.40 lack

Grand Total cost of project for three years 51.28 corer (75,65,816 Dollar)

(A) **BUDGET FOR SALARY / WAGES:**

Sr. No	Designation	Scale of pay	Monthly emolument	No.	1st Year	2nd year	3rd Year	Total
1	Sr. Scientist	Class 1	1.20 lack	1	14.40 lack	14.40 lack	14.40 lack	43.20 lack
2	Asst. Scientist	Class -2	0.8 lack	1	9.6 lack	9.6 lack	9.6 lack	28.,80 lack
3.	Jr. Scientist	Class -3	0.5 lack	2	12 lack	12 lack	12 lack	36 lack
4.	Lab Helper	Class-4	0.25 lack	3	9 lack	9 lack	9 lack	27 lack
5.	Skilled Labor	Class-4	0.2 lack	5	12 lack	12 lack	12 lack	36 lack
6.	Non-Skilled Labor	Class-4	0.15 lack	6	10.8 lack	10.8 lack	10.8 lack	32.40 lack
	Total				67.80 lack	67.80 lack	67.80 lack	203.4 lack

(B) BUDEGT FOR EQUIPMENT:

Sr. No	Equipment/ Accessories	Make & Model	Imported /Indigenous	Estimated Cost	F.E Component
1	High power laser Instrument with Transportation		Imported	1550 Lack	
2	Drone Air Craft Instruments		Imported	1250 Lack	
2	Construction cost for equipment &Camp/Mobile Van Two No's		Indigenous	250 Lack	
3	High power electric supply point./Fuel Materials		Indigenous	250 Lack	
4	Precipitation &atmospheric parameters measuring		Indigenous /imported	300 Lack	

	instrument etc				
6	Natural Lighting Protector Unit, as Conductor with earthling for Laser Instrument.		Indigenous /imported	120 Lack	
7	Construction of Guest House over Experimental Field.			120 Lack	
			Total	3840 Lack	

(C) CONSUMABLE ITEMS

S No	Items	QTY	Budget			
			1st year	2nd Year	3rd Year	Total
1	Electric supply for high power laser producer/Fuel materials	D.C	50 Lakh	50 Lack	50 Lakh	150 Lakh
2	Stationary & other misalliance equipment		40 Lakh	10 Lack	10 Lakh	60 Lack
3	Chemicals for testing or Analysis		20 Lakh	10 Lack	10 Lakh	40 Lack
4	Petrol/Diesel for transport		10 Lakh	10 Lack	10 Lakh	30 lack
5	Mess/Flooding Expenditure for Guest and Employees at Experiment Field		10 Lakh	10 Lack	10 Lakh	30 Lack
	Total		130 lack	90 lack	90 lakh	310 lakh

(D) BUDGET FOR TRAVEL:

Sr No	Description	Budget			
		1st year	2nd Year	3rd Year	Total
1	Conference for advance technology for discussion and suggestion	70 Lakh	40 Lack	40 Lack	150 Lack
2	Visit of top scientists to project for various suggestion	30 Lakh	20 Lack	20 Lack	70 Lack
3	Vehicle purchase for transport Two van and two motor cycles and maintenance	90 Lakh	50 Lack	50 Lack	190 Lack
	Total	190 lac	110 lack	110 lack	410 lack

(E) BUDGET FOR Patent file &Consultant fees: -

S.No	Description	Budget			
		1st year	2nd Year	3rd Year	Total
1	National & International Patent file expenditure	85 Lakh	05 Lack	05 Lack	95 Lack
2	Consultant fees / Expert guidance Service charges	40 Lakh	40 Lack	40 Lack	120 Lack
	Total	125 lack	45 lack	45 lack	215 lack

"To Design Artificial Rainmaking by using High power laser initiation endothermic reaction, in a way of Natural Lightning Phenomena Through drone air craft remote control system, in the atmosphere"

(Work-Plan (Three years)

This work plan will be executed after sanctioning of the project and depositing the fund in the joint account of Head of the institution and Principal investigator.

First Year		
1-4 Months	**5-8 Months**	**9-12 Months**
1. Publishing the advertisement for the appointment of scientists, skilled and non-skilled workers in the reputed news paper. 2. Demand for different instruments to different venders 3. Selection of proper site and arrangement of electricity, road, guest house etc.	1. Inviting experts from the concerned areas for table discussion on the project 2. Comparative statements of the received quotations for different instruments. 3. Purchase order of proper instrument to proper manufacturing company 4. Completion of point no. 3 from the first three months.	1. Organization of two days national conference on the theme of the project 1. Accessories , assembly and installment of received instruments on the mobile van and their testing .
Second Year		
1-4 Months	**5-8 Months**	**9-12 Months**
1. carrying experiments on the selected site and recording the observations	1. Inviting experts from the concerned areas for table discussion on the observations taken 2. Carrying experiments on the selected site and recording the observations as per the direction given by the experts	1. Analysis of the observations taken 2. Interpretation of the data 3. Publication of the result in the reputed national and international journals
Third Year		
1-4 Months	**5-8 Months**	**9-12 Months**
1. Analysis of the observations taken 2. Interpretation of the data 3. Publication of the result in the reputed national and international journals	1. Compilation of the data in computer software and commercialization of the same for the benefit of society.	1. Filing the patent for the artificial rainmaking system 2. Appeal to the Indian government and other countries to utilize this project for the benefit of Humankind.

BY
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