

# Alexandra Courtis

NAME: ALEXANDRA COURTIS  
AGE: 17  
SCHOOL: DAVIS SENIOR HIGH SCHOOL  
INVENTION: BRIGHT, LUMINESCENT SILICON  
NANOPARTICLES FOR BIOLOGICAL APPLICATIONS

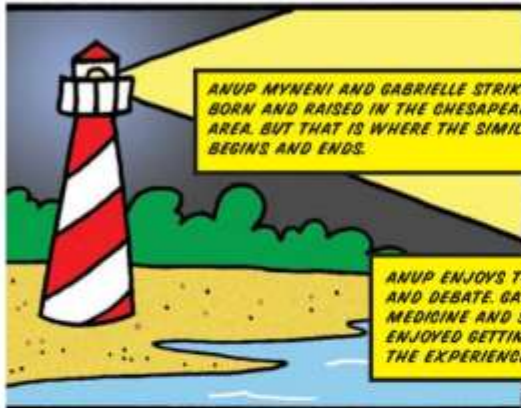


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# Anup Myneni Gabrielle Marie Strike

NAME: ANUP MYNENI & GABRIELLE MARIE STRIKE  
AGES: 17  
HOME: YORKTOWN, VA  
SCHOOL: YORK HIGH SCHOOL  
INVENTION: LUCERNE HAY RIPARIAN BUFFER COMPONENT



ANUP MYNENI AND GABRIELLE STRIKE WERE BORN AND RAISED IN THE CHESAPEAKE BAY AREA, BUT THAT IS WHERE THE SIMILARITY BEGINS AND ENDS.



ANUP ENJOYS TENNIS AND IS INTERESTED IN BUSINESS, ECONOMICS, AND DEBATE. GABRIELLE, ON THE OTHER HAND, IS MORE INTERESTED IN MEDICINE AND SCIENCE. IN FACT, WHEN SHE WAS QUITE YOUNG, SHE ENJOYED GETTING SHOTS AT THE DOCTOR'S OFFICE BECAUSE SHE FOUND THE EXPERIENCE SO FASCINATING!



THOSE WHO LIVE IN THE CHESAPEAKE BAY AREA ARE PARTICULARLY CONCERNED WITH THE SERIOUS ENVIRONMENTAL THREAT TO THE BAY FROM NITRATE POLLUTION CAUSED BY FERTILIZER RUNOFF DURING HEAVY RAINS. THE NITRATE CAUSES INCREASED ALGAE GROWTH, WHICH IN TURN INHIBITS NECESSARY OXYGEN PRODUCTION FROM MARINE PLANTS.



ANUP AND GABRIELLE TEAMED UP TO ADDRESS THIS PROBLEM, AND IN THEIR RESEARCH AND EXPERIMENTATION THEY DISCOVERED THAT IF LUCERNE HAY IS MIXED WITH THE SOIL NEAR THE WATER'S EDGE, IT CAN REDUCE THE NITRATE LOAD BY ROUGHLY FIFTY-FIVE PERCENT. THIS REDUCTION OCCURS BECAUSE THE BACTERIA IN HAY FEED ON THE NITRATES AND CONVERT THEM TO HARMLESS ATMOSPHERIC GAS.



THE LUCERNE HAY RIPARIAN BUFFER COMPONENT PROCESS HAS WON MANY AWARDS, INCLUDING SEMI-FINALIST IN THE 2007 SIEMENS COMPETITION AS WELL AS 1ST PLACE IN THE 2007 INTEL INTERNATIONAL SCIENCE AND ENGINEERING FAIR BOTH IN THE OVERALL TEAM PROJECT AND IN THE AGRICULTURE & BIOTECHNOLOGY CATEGORIES.

BOTH ANUP AND GABRIELLE PLAN TO ATTEND THE UNIVERSITY OF VIRGINIA. ANUP WILL STUDY BUSINESS AND ECONOMICS. GABRIELLE PLANS TO BECOME A DOCTOR OR AN ENVIRONMENTAL SCIENTIST.





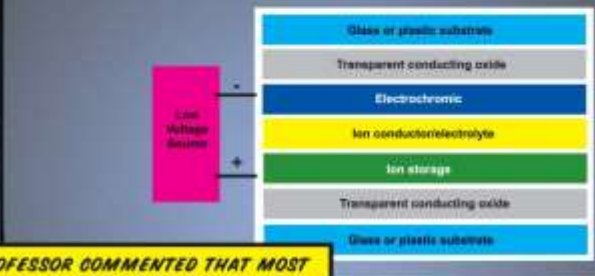
# Ananth Ram Arun Venkatraman

**NAMES:** ANANTH RAM & ARUN VENKATRAMAN  
**AGES:** 16 **HOME:** PLANO, TX  
**SCHOOL:** TEXAS ACADEMY OF MATHEMATICS AND SCIENCE  
**INVENTION:** A NOVEL CONTROL ALGORITHM FOR REGULATING THE TINTING OF ELECTROCHROMIC WINDOWS

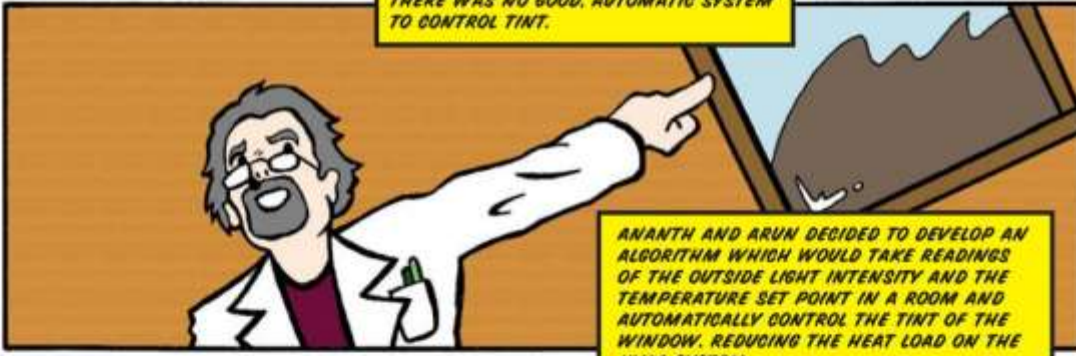
ANANTH AND ARUN BECAME FRIENDS IN 4TH GRADE AND SHARE AN ENJOYMENT OF MATH AND SCIENCE.



WHILE AT UNIVERSITY OF TEXAS, AUSTIN, ANANTH LEARNED ABOUT ELECTROCHROMIC WINDOWS, WHICH CAN CHANGE TINT WHEN AN ELECTRICAL CHARGE IS APPLIED ACROSS THE ACTIVE CENTER LAYER IN A CLEAR SANDWICH.



THE PROFESSOR COMMENTED THAT MOST OF THE TINT CONTROL WAS MANUAL AND THERE WAS NO GOOD, AUTOMATIC SYSTEM TO CONTROL TINT.



ANANTH AND ARUN DECIDED TO DEVELOP AN ALGORITHM WHICH WOULD TAKE READINGS OF THE OUTSIDE LIGHT INTENSITY AND THE TEMPERATURE SET POINT IN A ROOM AND AUTOMATICALLY CONTROL THE TINT OF THE WINDOW, REDUCING THE HEAT LOAD ON THE HVAC SYSTEM.



THEY WORKED AT UT DALLAS LAST YEAR TO PERFECT THE ALGORITHM. THEY WILL WORK THIS SUMMER ON USING CARBON NANOTUBES AS THE ELECTRODE ON THE CLEAR LAYERS FOR ADVANCED ELECTROCHROMIC WINDOWS.

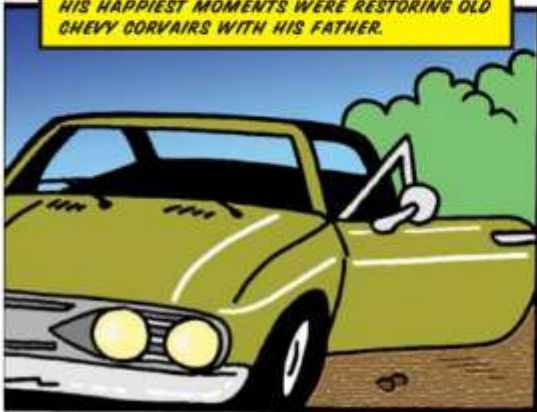
BOTH PLAN ON PURSUING DEGREES IN ELECTRICAL ENGINEERING IN COLLEGE.



# Micah Toll

NAME: MICAH L. TOLL  
AGE: 17  
HOME: LEBANON, PA  
SCHOOL: CEDAR CREST HIGH SCHOOL  
INVENTION: PORTABLE FOAM  
CORE CONSTRUCTION BEAMS

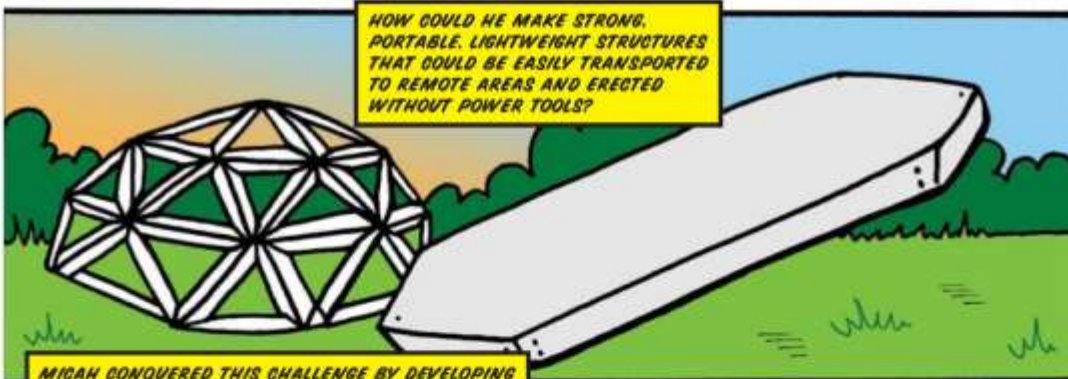
FROM EARLY CHILDHOOD MICAH TOLL PRODUCED A STEADY STREAM OF INVENTIONS - AND WAS CONSTANTLY DISAPPOINTED TO DISCOVER THAT SOMEONE ELSE HAD INVENTED THEM FIRST. BUT HIS HAPPIEST MOMENTS WERE RESTORING OLD CHEVY CORVAIRS WITH HIS FATHER.



WHEN MICAH WAS THIRTEEN, HE WATCHED A NEWS PROGRAM THAT DEPICTED THE LIVING CONDITIONS OF THOSE LEFT HOMELESS BY THE WAR IN AFGHANISTAN. THIS GOT MICAH TO THINKING.



HOW COULD HE MAKE STRONG, PORTABLE, LIGHTWEIGHT STRUCTURES THAT COULD BE EASILY TRANSPORTED TO REMOTE AREAS AND ERECTED WITHOUT POWER TOOLS?



MICAH CONQUERED THIS CHALLENGE BY DEVELOPING A UNIQUE PROCESS THAT USES CORRUGATED PLASTIC SHEETS TO MAKE FORMS THAT CAN BE FILLED WITH EXPANDING POLYURETHANE FOAM TO CREATE EXTREMELY STRONG AND RIGID CONSTRUCTION MEMBERS. THESE CAN BE USED TO CONSTRUCT NEARLY ANY TYPE OF STRUCTURE FROM GEODESIC DOMES TO HOUSES.

MICAH'S INVENTION HAS WON MANY AWARDS INCLUDING 2ND PLACE IN THE 2006 INTEL SCIENCE AND ENGINEERING FAIR, NATIONAL SEMIFINALIST IN THE 2007 INTERNATIONAL SCIENCE AND ENGINEERING FAIR, AND 1ST PLACE IN THE TECHNOLOGY STUDENTS ASSOCIATION. HE ALSO HAS A PATENT PENDING.

MICAH TOLL IS PRESENTLY ENROLLED IN THE UNIVERSITY OF PITTSBURGH'S SCHOOL OF ENGINEERING.

