At Ball Aerospace, you’ll find work that matters and a culture based in collaboration, transparency and integrity. From revolutionary space missions and world-renowned sensors to data and cyber solutions, Ball Aerospace gives its employees unique opportunities to work on cutting-edge missions that help our customers learn about our planet, protect lives and build a better tomorrow.

Ball Aerospace has opportunities available in a variety of engineering disciplines. We also have current needs in Information Technology, Program Security, Finance and Supply Chain Management.

**Colorado**
- Mechanical Engineers (Structural, Electrical, Optical, RF)
- Program, Project and Advanced Systems Managers
- Electrical Power System Engineers
- FPGA Design & Verification Engineers
- Analog/Digital Design Engineers
- EEE Parts & Component Engineers
- Attitude Determination and Control Engineers
- Mission Systems Engineers
- Guidance, Navigation, and Control Engineers
- Ground System Engineers
- Radiation Effects & Reliability Engineers
- Optical and Detector Engineers
- Thermal/Cryogenic Engineers
- Manufacturing Engineers
- RF Engineers (Low Observable, Phased Array)
- Antenna Range Technicians
- Technicians (Test, Electrical & RF)
- Industrial Security Professionals
- Cyber Security Professionals
- Embedded Software Engineers

**WHY WORK AT BALL?**

From our strong culture to unique opportunities for career growth, our employees love working at Ball. But, don’t take our word for it. Hear directly from our employees all the reasons they love working at Ball here: ball.com/aerospace/about-ball-aerospace/careers
- Systems Administrators
- Executive and Administrative Associates (TS/SCI)
- Contracts Administrators (Government)
- Project Controls Specialists
- Subcontract Leads

**New Mexico:**
- Laser Engineers and Researchers
- Research and Development Mechanical Engineers
- Technical Specialists (Mechanical, Electrical)

**Ohio:**
- Systems Administrators
- Network Administrators
- Embedded Avionics Systems Engineers
- Machine Learning Software Engineers
- Computer Systems Hardware Engineers
- Information Assurance/ISSO

**Maryland:**
- Software Developers
- Intelligence Analysts
- Computer Scientists
Ball Aerospace provides science at any scale. From delivering entire missions to contributing component level expertise, we value our role as a mission partner and strive to Go Beyond®.

Our extensive heritage across a wide breadth of NASA science and exploration mission classes informs our development of technology that will enable the science of tomorrow.
Ball Aerospace played a variety of roles in all four of the Great Observatories, ranging in scale from tools and components to full instrumentation. We continue to leverage innovative technologies developed for these missions for use in the next-generation of space telescopes such as the James Webb Space Telescope (Webb), the Wide Field InfraRed Survey Telescope (WFIRST) and beyond.

**WIDE FIELD INFRARED SURVEY TELESCOPE**
- Partnered with NASA GSFC to design and develop the Opto-Mechanical Assembly for the Wide Field Instrument (WFI)
- Supporting WFI assembly, integration and test

**JAMES WEBB SPACE TELESCOPE**
- Designed and built the advanced optical technology and lightweight mirror system
- Designed mirror control electronics

**HUBBLE SPACE TELESCOPE (HST)**
- Goddard High Resolution Spectrograph
- Corrective Optics Space Telescope Axial Replacement
- Advanced Camera for Surveys
- Space Telescope Imaging Spectrograph
- Near Infrared Camera and Multi-Object Spectrograph
- Cosmic Origins Spectrograph
- Wide Field Camera 3
- Two star trackers
- Five major leave-behind equipment subsystems
- Eight custom tools for servicing

**COMPTON GAMMA RAY OBSERVATORY**
- Oriented Scintillation Spectrometer Experiment
- Two fixed-head standard star trackers

**SPITZER SPACE TELESCOPE**
- Infrared Spectrograph
- Multiband Imaging Photometer
- Cryogenic telescope assembly

**CHANDRA X-RAY OBSERVATORY**
- Built Aspect Camera and Science Instrument Module
From major directed missions such as the Europa Clipper, to small ride-share opportunities such as CIRIS and TEMPO, whether we serve as prime or have a more focused role, we work closely with our partners to ensure mission success and deliver science at any scale.

Our customer’s mission is our greatest priority. With a strong focus on PI-led science, we deliver excellence across the entire program. From concept to launch, our scientists and engineers are involved every step of the way. We deliver innovative space solutions and remain cost conscious, always focused on our customer’s goals.

**EUROPA CLIPPER**

**E-TEMIS Instrument Support:**
- Radiation modeling and instrument radiation mitigation design
- Radiation testing of two candidate microbolometer detectors and electronics

**NEW FRONTIERS**

New Horizons – Ralph imager:
- Visible imager and an infrared spectrometer

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**DISCOVERY**

NEOCam (in development)
- Spacecraft

Kepler/K2 - Complete Flight System:
- Spacecraft and photometer
- Systems integration and testing
- Supported operations

Deep Impact/EPOXI - Complete Flight System:
- Two spacecraft
- Two imagers
- One imager/spectrometer

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**MIDEX**

SPHEREx mission Concept Study (in competition):
- Spacecraft

WISE/NEOWISE:
- Spacecraft
- Flight system integration and testing
- Mission operations

SMEX

IXPE (in development):
- Spacecraft
- Instrument Integration and system level testing

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**SALMON-3**

*Heliophysics missions of opportunity*

Kon-Tiki (in competition):
- Spacecraft

SIMPLEX

Athena (in competition):
- Spacecraft

Lunar Trailblazer (in competition):
- Spacecraft

Earth Science SmallSat mission

Zephyr (in competition):
- Instrument

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**INVEST**

CIRIS (in development):
- Compact Infrared Radiometer in Space instrument
- Instrument integration and system level testing

**EVI-1**

TEMPO: Tropospheric Emissions: Monitoring Pollution Ultraviolet Spectrometer
- Instrument
LAND IMAGING & WEATHER

As technologies emerge and continue to become smaller, Ball is at the forefront of miniaturizing instruments for air and space-based applications, offering new, affordable solutions to our customers while continuing to deliver the high-quality data they need to perform their missions.

Ball designs and builds innovative remote sensing instruments, spacecraft and systems that support actionable environmental intelligence. From enabling more accurate weather forecasts to delivering insightful observations of our planet, we provide decision makers the information they need to protect what matters most: you, your family and our nation.

LANDSAT (PRESENT)
Landsat 8 and 9 NASA/USGS missions
- Operational Landsat Imagers
- Cryogenic Cooler for Thermal Infrared Sensors

SUSTAINABLE LAND IMAGING-TECHNOLOGY PROGRAM (FUTURE)
- Compact Hyperspectral Prism Spectrometer
- Reduced Envelope Multi-Spectral Imager

POLAR SATELLITE OBSERVATORIES (PRESENT)
Suomi National Polar Orbiting Partnership
- Spacecraft
- Ozone Mapping and Profiler Suite instrument

Joint Polar Satellite System-1
- Spacecraft
- Ozone Mapping and Profiler Suite instrument

COMPACT INFRARED RADIOMETER IN SPACE MISSION (FUTURE)
- Highly-calibrated infrared Cubesat-compatible, miniaturized instrument

SPACE-BORNE MICROWAVE RADAR WEATHER SYSTEMS
Global Precipitation Measurement (Present):
- Microwave Imager

Weather System Follow-on (Future):
- Spacecraft
- Microwave instrument
- System software

BALL AT A GLANCE

Ball Aerospace employs more than 3600 people. We are based in Boulder, Broomfield and Westminster, Colorado, with locations in Greenbelt, Maryland, Dayton, Ohio, Albuquerque, New Mexico, Arlington and Chantilly, Virginia.

COMMUNITY INVOLVEMENT

Our employees go beyond in the fields of science and technology to serve their communities around the globe. From participating in NASA review panels to donating thousands of dollars and hours to STEM outreach – Ball is committed to contributing to the larger aerospace community to ensure a better tomorrow.

- NASA review panels
- NASA Studies and Working Groups
- Decadal & white paper contributions
- NASA group achievement awards and other public service awards
- Professional Society Engagement

STEM OUTREACH

2018

6,300 VOLUNTEERS

16,300 RECIPIENTS

$2.3M DONATIONS

BECAUSE 2018

30,400 HOURS VOLUNTEERED

1,600 CHARITIES
GO BEYOND WITH BALL.

For more than 60 years, Ball Aerospace has been the provider of choice for leading-edge imaging systems. Ball has consistently delivered reliable and affordable instruments that span the electromagnetic spectrum for a wide range of defense and intelligence, civil and commercial applications.
As both a spacecraft and instrument developer, Ball has a unique understanding of instrument integration and strong experience delivering end-to-end systems. This knowledge gives Ball a mission systems expertise that translates into a proven ability to fulfill our customers’ most challenging requirements. Ball specializes in providing advanced electro-optical, infrared and multi-spectral imaging systems for defense and intelligence, civil and commercial missions.

Ball is proud to have contributed to all four of NASA’s Great Observatories, including the Compton Gamma Ray Observatory, the Hubble Space Telescope, the Chandra X-ray Observatory and the Spitzer Space Telescope. NASA designed the Great Observatories to make astronomical studies over many different wavelengths (visible, gamma rays, X-rays and infrared) to provide a greater understanding of the universe.

**COMPTON GAMMA RAY OBSERVATORY**

Ball built the Oriented Scintillation Spectrometer Experiment (OSSE) and two star trackers for the Compton Gamma Ray Observatory. OSSE, along with three other instruments, detects high-energy radiation.

**HUBBLE SPACE TELESCOPE**

This Great Observatory almost never observed clearly without the assistance of the Ball-developed corrective optics that act as Hubble’s eyeglasses. After the telescope was launched, a spherical anomaly distorted its imagery, and Ball was called upon to solve the problem. Since restoring the telescope’s imaging capability in 1993, Ball has built six more instruments for Hubble. Currently, all of the scientific instruments aboard the telescope are Ball-built.

**CHANDRA X-RAY OBSERVATORY**

For the Chandra X-ray Observatory, Ball built the Aspect Camera and Science Instrument Module to help identify hot spots in the universe, such as exploded stars and matter near black holes.

**SPITZER SPACE TELESCOPE**

Ball built the “eyes” of Spitzer — called the Cryogenic Telescope Assembly — and two of the three science instruments onboard this infrared observatory.

**JAMES WEBB SPACE TELESCOPE**

Carrying on the legacy of the Great Observatories, Ball developed the entire optical system for NASA’s James Webb Space Telescope, the world’s next-generation space observatory.

The system includes 18 1.3-meter hexagonal mirror segments to compose the 6.5-meter primary mirror, making it the largest mirror ever flown in space. Ball leads the development, design, manufacture, integration and test of Webb’s primary, secondary, tertiary and fine-steering mirrors.
Predicting weather and monitoring the Earth’s environment for civil and military needs alike, Ball has a consistent track record of delivering affordable instruments to its customers and has experience with both fixed-price and cost-plus Earth observation instruments.

**MOIRE**

Ball completed the Membrane Optical Imager for Real-Time Exploitation (MOIRE), a Defense Advanced Research Projects Agency (DARPA)-funded program that aimed to provide persistent, real-time tactical video to the warfighter using a large aperture telescope. The program demonstrated Ball’s ability to manufacture large collection area telescopes (up to 20 meters); the large structures needed to hold the optics tight and flat; and the additional optical elements needed to turn a diffraction-based optic into a wide bandwidth imaging device.

**CAVIS**

The Ball-built Cloud, Aerosol, Water Vapor, Ice, Snow (CAVIS) atmospheric instrument aboard WorldView-3, a commercial imagery satellite built by Ball, provides atmospheric correction data to improve WorldView-3’s imagery. Ball provided the CAVIS instrument at a fixed-price and substantial cost savings by using a modular and command product for the electronics designs, focal plane detectors and spectral filter.

**GLOBAL PRECIPITATION MEASUREMENT-MICROWAVE IMAGER (GMI)**

This Ball-instrument is setting the new standard for calibration for the scientific community’s radiometer needs. This imager is central to the Global Precipitation Measurement (GPM) mission’s success by allowing for temporal sampling of rainfall accumulations, as well as more frequent and higher quality data collection.

**OPERATIONAL LAND IMAGER**

To continue 45 years of land data records and to meet the nation’s imaging requirement, Ball was called upon to build the Operational Land Imagers (OLI) for Landsat 8 and 9. OLI is a highly calibrated, precise, multi-spectral imaging instrument that enables better spatial resolution and greater sensitivity to brightness and color than any previous Landsat missions. OLI has set the new Landsat standard for radiometric and geometric accuracy.

**WORLDVIEW-1**

Ball built the fixed-price WorldView-1 60-centimeter telescope and assembled the entire instrument to provide high resolution imaging capabilities to DigitalGlobe. The WorldView-1 spacecraft was also built by Ball and is capable of collecting up to 500,000 square kilometers (200,000 sq. mi.) of half-meter imagery per day with extremely precise geolocation accuracy.

**CALIPSO**

The Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations (CALIPSO) mission is dedicated to studying the impact that clouds and aerosols have on the Earth’s climate. The lidar scans the atmosphere with green and infrared laser light and detects backscatter from clouds and aerosols. CALIPSO’s laser has fired more than 7 billion shots during its lifetime.
SPECIALIZED TELESCOPES

Ball delivers affordable, innovative solutions to solve its customers' toughest planetary, astronomical and space situational awareness challenges.

KEPLER AND K2

Ball designed and built the photometer and spacecraft and supported mission operations for NASA's exoplanet-hunting Kepler mission. The photometer measured the brightness of 150,000 stars, allowing it to detect changes in brightness due to a passing planet. The pointing precision of the spacecraft was controlled to within a few milli-arcseconds and its photometer featured a focal plane array of 42 charge coupled devices to collect the photons of light observed by Kepler. After 9 years of observations and discovering more than 2,600 planets outside our solar system, Kepler was retired in 2018.

SBSS

Providing critical 24/7 space situational awareness on-orbit, Ball was responsible for delivering the entire space segment for the Space Based Space Surveillance (SBSS) satellite. The SBSS agile gimbaled visible sensor accurately detects space objects with increased capacity and improved timeliness, sensitivity and overall flexibility.

HIRISE

Ball designed and built the High Resolution Imaging Science Experiment (HIRISE) for NASA's Mars Reconnaissance Orbiter mission. HIRISE is the largest telescopic camera ever sent into orbit around another planet and is able to identify images as small as a coffee table.