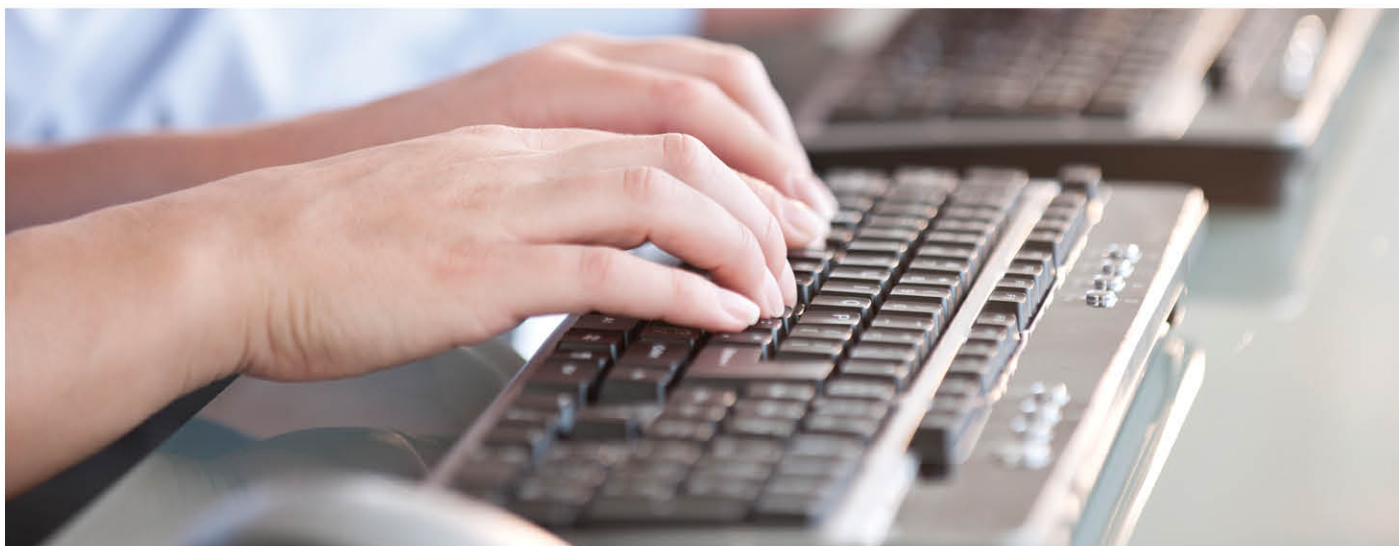


MEET THE
CPA GLOBAL PATENT RESEARCH TEAM



Patent Research and Analytics Services Team

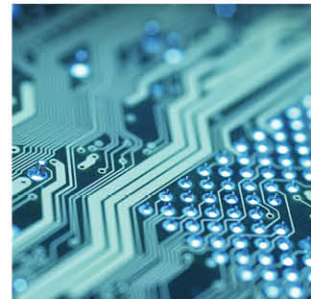
With over 50,000 completed patent search projects and more than 200 experienced patent researchers across four continents, CPA Global is one of the world's largest searching entities. Our patent searches are tailored to meet your unique business needs and adhere to specific guidelines that guarantee reports of the highest quality. With experience across all major technology domains and industries, our global search team has online and physical access to leading analytical tools, patent databases, non-patent literature sources, research libraries and specialty databases.



Meet our Patent Research and Analytics Services Team

The profiles included here represent a sample of the broad spectrum of expertise offered by our patent researchers. As well as offering multi-language search capability, they are well-versed in classifications, keywords and patent terminology and have deep technical knowledge in areas such as:

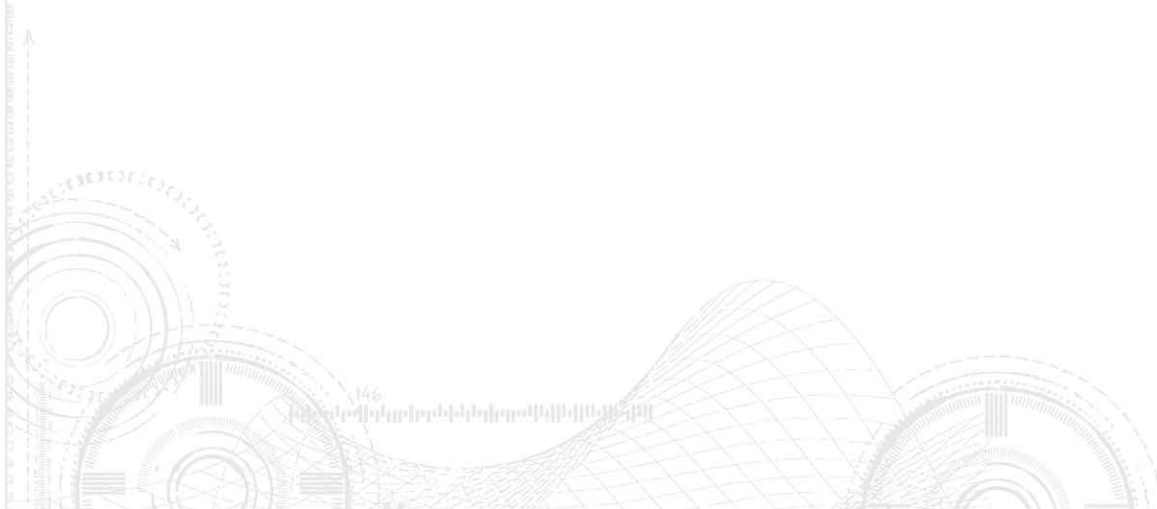
- CHEMISTRY
- PHARMACEUTICALS
- BIOTECHNOLOGY
- LIFE SCIENCES
- COMPUTER SCIENCE
- MATERIALS SCIENCE
- BUSINESS METHODS
- ELECTRICAL ENGINEERING
- MECHANICAL ENGINEERING
- AUTOMOTIVE TECHNOLOGY





Chemistry, Biotechnology & Life Sciences

CPA Global has a long history in the chemical, life sciences, pharmaceutical and biotechnology sectors, with a team of experts offering unparalleled patent research capabilities in these cutting-edge areas.



AREAS OF EXPERTISE INCLUDE:

- Genetic engineering
- Membrane biochemistry
- Molecular biophysics
- Biotechnology
- Chemistry
- Molecular biology
- Medical devices
- Organic chemistry
- Materials science
- 18 years' experience



Dr. Sarasija Padmanabhan

Dr. Sarasija Padmanabhan holds a Ph.D. in molecular biology from the Shemyakin Institute of Bio-organic Chemistry and Molecular Biology at the Russian Academy of Sciences. Additionally, she has a bachelor of laws degree from Annamalai University and has had work published in international journals. She is highly skilled at patent search, competitive patent landscaping, file-history analysis and myriad other patent support services, with particular competencies in biology, chemistry and medical engineering.

AREAS OF EXPERTISE INCLUDE:

- Life sciences
- Computational biology
- Systems biology
- Pharmacogenomics
- Medical devices
- Synthetic biology
- High-throughput techniques
- 5 years' experience



Amitabh Gupta

Amitabh Gupta holds a bachelor's degree in biotechnology engineering from IIIT University, Noida, and a certificate in General IPR from the World Intellectual Property Organization. Prior to joining CPA Global, he worked on biotechnology domains (e.g., life sciences, network biology, systems biology, comparative genomics) for a biotech startup. Amitabh has worked on projects encompassing DNA vaccines, biosensors, chemical formulations and molecular diagnostics.

AREAS OF EXPERTISE INCLUDE:

- Organic chemistry
- Medicinal chemistry
- Synthetic carbohydrate chemistry
- Biofuels
- Biocatalysts
- Petrochemicals
- Oil and gas
- 4 years' experience



Dr. Satish Malik

Dr. Satish Malik holds a Ph.D. in chemistry from the National Institute of Pharmaceutical Education and Research (NIPER), Mohali, and an MSc in organic chemistry from Kurukshetra University. He had published his research work in renowned international research journals and also presented his work at national and international conferences. Satish has extensive patent-research experience encompassing validity, patentability, freedom-to-operate and landscape studies in the fields of chemical sciences, biotech and petrochemicals.

AREAS OF EXPERTISE INCLUDE:

- Tobacco/cigarette processing and appliances
- Interactive video distribution systems
- Financial/business practice and management
- Social networking and user-behavior analysis
- User/operator interface processing
- Software development and management
- Semiconductor fabrication
- Semiconductor materials properties
- 8 years' experience



Kumar Anshu

Kumar Anshu earned a bachelor of technology degree from the Indian Institute of Technology, Bombay, with a focus on metallurgical engineering and materials science. Prior to joining CPA Global in 2007, he worked as a software engineer with Tavant Technologies. Kumar has experience in numerous technology domains including metallurgy, chemicals, computer science and business methods, nanotechnology, semiconductor technology, mobile technology and multimedia. He has worked on a variety of searches including patentability, validity and freedom-to-operate, and has a strong knowledge of IP.

AREAS OF EXPERTISE INCLUDE:

- Organic/inorganic chemistry
- Bio-organic chemistry
- Pharmaceuticals
- Industrial chemistry
- Agricultural sciences
- Food science
- Polymers
- 25 years' experience



Charlotte Uhlig

Charlotte Uhlig holds a master's degree in chemistry from the University of Wuppertal. She has more than 25 years' experience in chemical patent indexing and research. Charlotte joined the research group of Hoechst AG in 1994, and her expertise encompasses freedom-to-operate, validity, infringement, state-of-the-art, novelty and patentability searches in all areas of chemistry, pharmaceuticals and agriculture. She specializes in chemical structure and reaction searches, as well as complex keyword searches.

AREAS OF EXPERTISE INCLUDE:

- Chemistry
- Organic chemistry
- Bio-organic chemistry
- Bio-sequences
- Medicinal chemistry
- Pharmaceuticals; active ingredients/formulations
- Agricultural sciences
- Biotechnology
- Toxicology
- 18 years' experience



Dr. Susanne Kretschmer

Dr. Susanne Kretschmer studied chemistry at the Technical University of Braunschweig and holds a diploma degree and a Ph.D. in biochemistry and biotechnology. She was a postdoctoral fellow at MIT and a lecturer at Cologne University of Applied Sciences. Susanne has worked as a patent researcher for 18 years and is skilled in searches involving freedom-to-operate, state-of-the-art, novelty, patentability, validity and infringement. She has conducted sophisticated keyword, chemical structure and bio-sequence searches and provided analysis of the search results.

AREAS OF EXPERTISE INCLUDE:

- Organic chemistry
- Bio-organic chemistry
- Nucleoside and nucleotide analogues
- Medicinal chemistry
- Pharmaceuticals; active ingredients/formulations
- Agricultural sciences; insecticides, herbicides, crop protection
- Biotechnology
- Toxicology
- Legal status
- 14 years' experience



Dr. Martina Lorey-Radler

Dr. Martina Lorey-Radler holds a Ph.D. in organic chemistry from the University of Wurzburg. She specializes in chemical structure and reaction searching of exact and generic structures in all databases on STN and Questel-Orbit. She is also experienced in keyword searches in all areas of chemistry and biotechnology and specializes in evaluation and analysis of search results. Martina has conducted numerous freedom-to-operate, infringement, validity, novelty, patentability and state-of-the-art searches. She is also experienced in patent monitoring, including searches for all kinds of legal status information worldwide using various databases.



Computer Science & Business Methods

CPA Global's Computer Science researchers have unrivaled experience in providing patent research services for many of the world's largest IT firms. CPA Global has been a leader in Business Methods research since the classification was created, with extensive experience in fields as varied as gaming systems, financial and investment products, insurance, business modeling and e-commerce.



AREAS OF EXPERTISE INCLUDE:

- Communications
- 3G
- GSM
- Messaging systems
- MMSC, SMSC, AGAS
- VASP gateway
- SDLC
- L5 protocols
- Programming and software
- C++, Java
- C+.NET
- Oracle, Pl/Sql
- Shell programming
- Web development
- Platform
- Solaris, Linux
- Windows
- 5 years' experience



Gaurav Chadha

Gaurav Chadha holds a bachelor's degree in computer science from Punjab Engineering College and currently works for CPA Global as a principal patent analyst. He has managed several projects in the Computer Science and Business Methods domain and is skilled at novelty, freedom-to-operate and validity searches. Gaurav is also highly competent in software development.

AREAS OF EXPERTISE INCLUDE:

- Core computer science
- Computer science applications
- Programming and software
- 4 years' experience



Manasi Mehta

Manasi Mehta holds a bachelor's degree in information technology from Delhi College of Engineering (University of Delhi). Before joining CPA Global, she worked with Evalueserve. She has worked on projects such as technology landscape, patent-to-product mapping and standards mapping, and patentability. Manasi has also performed a technology landscape on the backlighting used in LCDs, LEDs and plasma televisions.

AREAS OF EXPERTISE INCLUDE:

- Core computer science
- Programming and software
- 1 year's experience



Ankur Verma

Ankur Verma holds a bachelor's degree in computer science and engineering from the Institute of Engineering and Rural Technology, Allahabad. He is currently working as an IP researcher for CPA Global and has search experience in the areas of FTO/FTP, invalidity, novelty, patentability, infringement and state-of-the-art relating to computer science.

AREAS OF EXPERTISE INCLUDE:

- Computer science
- Operating systems
- Computer networking
- Computer memory
- Data warehousing
- Pervasive computing
- Software architecture
- Database analytics
- Computer architecture
- Augmented reality
- Printers
- Cloud computing
- Portable and handheld devices, user interfaces, touchscreens, GUIs
- 5 years' experience



Anoop Vashistha

Anoop Vashistha holds a master's degree in software systems from BITS Pilani. Through various projects, Anoop gained extensive experience in infringement analysis, patentability searches and accelerated examination as they relate to technology domains including computer science, printers, cloud computing, mobile, memory, operating systems, software testing, software tools and Internet applications. Prior to joining CPA Global, Anoop worked with GlobalLogic Pvt. Ltd. as a software engineer developing web applications.

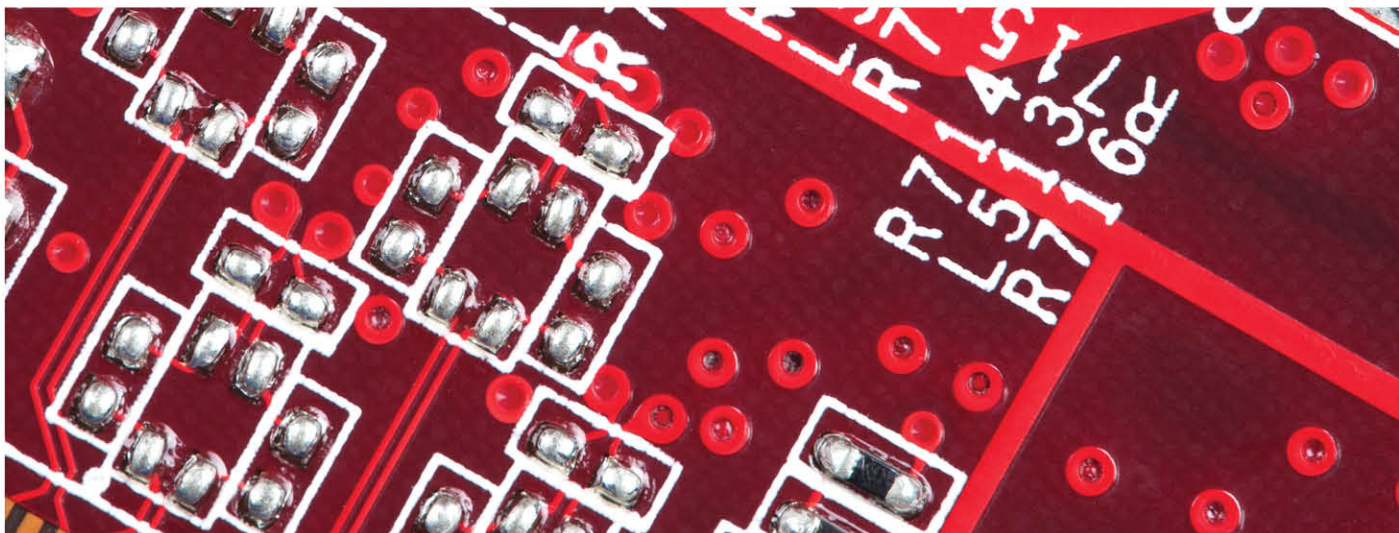
AREAS OF EXPERTISE INCLUDE:

- Graphical user interface
- Document processing
- Video gaming
- Digital televisions
- Messaging systems
- Cellphones
- 6 years' experience



Brandon Parker

Brandon Parker holds a bachelor's degree in computer science and information systems. Before joining CPA Global, he worked at the U.S. Patent and Trademark Office as a patent examiner. Brandon has been a lead researcher in work involving wireless security and software applications at the Georgia Institute of Technology and Old Dominion University. He has extensive knowledge of patent prosecution and has granted, allowed and rejected numerous patent applications. Brandon has hands-on training of the USPTO's Manual of Patent Examining and Procedure and has conducted many client and attorney consultations.



Electrical Engineering

CPA Global's Electrical Engineering patent research team conducts searches across the entire spectrum of electronic patents, including new and emerging areas of focus such as nanotechnology and hybrid vehicle technology. More than 85 percent of CPA Global researchers have both postgraduate degrees and relevant work experience, allowing them to support clients with both subject-matter expertise and real-world R&D insights.



AREAS OF EXPERTISE INCLUDE:

- Wireless communication
- TMG/process thermo
- Mobile platforms
- Power and thermal management
- Low-power architecture
- Power delivery
- Power sources
- Extended battery life
- Display technology
- Security and trusted platforms
- Bus technology
- 35 years' experience



Ved Prakash Singh

Ved Prakash Singh holds a master's degree in electronics and instrumentation from the Indian School of Mines, Dhanbad. He has 35 years' experience in the field of electronics and telecommunication and has published papers in international research journals. Prior to joining CPA Global — where he currently works as IP lead — Ved was a project director at the Defence Research and Development Organization (DRDO), where he was responsible for R&D in digital electronics, microwaves, telecommunication infrastructure deployment, testing and field trials.

AREAS OF EXPERTISE INCLUDE:

- Semiconductors
- Organic electronic devices
- Communication systems
- Materials science
- 8 years' experience



Ankur Srivastava

Ankur Srivastava holds a master's degree in materials science from the Indian Institute of Technology, Kanpur, with a focus on organic electronic materials. Before joining CPA Global in 2007, he worked with Geometric Software Systems in CAD/CAM and product lifecycle management (PLM) products and technologies. He has also carried out research in the field of organic display technologies and has extensive experience in the fabrication and characterization of organic electronic devices and their packaging.

AREAS OF EXPERTISE INCLUDE:

- Embedded systems and micro-controllers
- Telecommunications
- Digital signal processing
- 8 years' experience



Subodh Thali

Subodh Thali holds a master's degree in telecommunications from La Trobe University in Melbourne, Australia, and a bachelor's degree in electronics and telecommunications from Goa University in India. His IP research experience includes the areas of patentability, invalidity, infringement, opposition, accelerated examination, and state-of-the-art. He has also worked on patent landscapes in the electronics, telecommunications and computer science domains and on telecommunications standard mapping projects.

AREAS OF EXPERTISE INCLUDE:

- Wireless networks
- Antenna design and theory
- RF and microwave
- Computer networks
- Digital and analog electronics
- Programming — C, C++
- Software packages
- Digital communication
- Multimedia broadcast
- 4 years' experience



Ankur Aggarwal

Ankur Aggarwal holds bachelor's and master's degrees in electronics and communication engineering, with a specialization in wireless technology, from the Indian Institute of Technology, Roorkee. He has extensive experience in the field of antenna design and has presented his work at symposiums and in international journals. Before joining CPA Global, Ankur worked with Evalueserve for several Fortune 500 clients, managing projects related to telecommunications, IT, web services, e-commerce and computer networks.

AREAS OF EXPERTISE INCLUDE:

- RF and microwave
- Antenna and wave propagation
- Digital TV and MPEG technology
- LED fabrication
- Analog electronics
- Digital electronics
- 3 years' experience



Ragini Jain

Ragini Jain has a bachelor's degree in electronics and communication engineering from the University of Rajasthan, and a master's degree in RF & Microwave from the Indian Institute of Technology, Roorkee. She has published widely in the field of microwaves and has worked on projects for multinational corporations involving digital television, displays, set-top boxes and MPEG.

AREAS OF EXPERTISE INCLUDE:

- Wireless communications
- Electronic circuits
- Radio communications
- Video gaming, game engines (including SDKs)
- Computer networks
- Computer peripherals
- Home appliances
- Digital televisions, display technologies, video compression techniques
- 7 years' experience



Narayan Singh Rao

Narayan Singh Rao holds a bachelor's degree in electronics and communication engineering from the Indian Institute of Technology, Roorkee. He has diverse experience in patent search, analytics and prosecution and is responsible for patent portfolio optimization projects. Prior to joining CPA Global, he worked with Evalueserve, managing projects involving telecommunications, IT, medical devices and computer networks for several Fortune 500 clients.

AREAS OF EXPERTISE INCLUDE:

- GSM, CDMA, UMTS, LTE
- IEEE standards, 3GPP standards, NFC and short-range communications
- USB standards - 2.0, 3.0 and other communications systems, linear integrated circuits, digital electronics, DSP
- 3 years' experience

**Tushar Gupta**

Tushar Gupta holds a bachelor of engineering degree in electronics and communication from NSIT, New Delhi. He also earned a certificate in Intellectual Property Rights and Information Technology in the Internet Age from the Indian Law Institute. Tushar has worked on various patent analytics projects, including technology landscapes, competitor profiling, infringement analysis, standards mapping, prior art searches, patent marketing packages, and competitive intelligence reports. He has worked on technologies related to communication, electrical engineering, automotive, finance and the Internet. Prior to joining CPA Global, he worked on numerous academic and industrial projects.

AREAS OF EXPERTISE INCLUDE:

- Wireless communications
- Telephonic communications
- Electrical/audio signal processing systems and devices
- Cellular/mobile/wireless environments
- Repeater system radio frequency systems
- Microwave systems, GPS, paging
- Systems and radiotelephone equipment
- Wireless carrier wave channels
- 22 years' experience

**Sheila Smith**

Sheila Smith holds a bachelor of science degree in electronic engineering from Savannah State University. Prior to joining CPA Global, Sheila worked for 12 years at the U.S. Patent and Trademark Office as a patent examiner, performing patent prosecution of wireless and cellular devices. Before that she worked for 10 years for American Systems Corp. as a systems engineer in support of the U.S. Navy on the USS Sea Wolf Nuclear Attack Submarine Program.

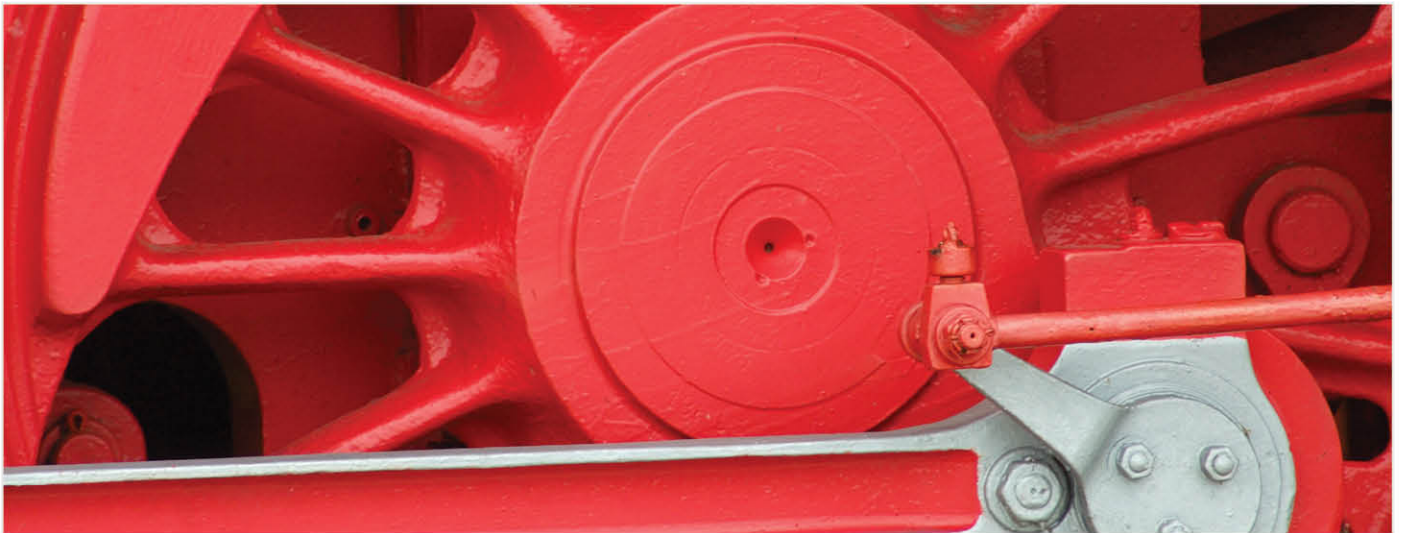
AREAS OF EXPERTISE INCLUDE:

- Semiconductor fabrication
- Semiconductor packaging
- LED and OLED
- Lighting and illumination
- Optical elements and materials
- Display
- Mobile telecommunications
- 6 years' experience



Bohyun Chung

Bohyun Chung holds a bachelor's degree in electronic engineering from Seoul National University. Bohyun has several years' experience in IP, encompassing infringement and validity research, landscape/patent mapping, patent prosecution, litigation, negotiations, IP valuations/transactions and IP strategies. He worked as senior patent counsel for a Korean LED manufacturer, playing a major role in all IP matters, managing the IP group and working with Korean conglomerates.



Mechanical Engineering

CPA Global's Mechanical Engineering patent research team has extensive experience in providing search services ranging from novelty/patentability all the way through to detailed patent landscape studies. Team members have provided thousands of searches encompassing industries as diverse as automotive, consumer electronics and food packaging.



AREAS OF EXPERTISE INCLUDE:

- Rotary equipment (turbo-machinery)
- HVAC and chiller systems
- Vibration and condition monitoring
- Fluid dynamics
- Power-generating systems
- Bearings
- Machine design
- IC engines
- Static equipment
- Petroleum refining
- Fluidized catalysis
- 3 years' experience



Nishant Prakhar

Nishant Prakhar holds a bachelor of technology degree in mechanical engineering from the Indian Institute of Technology, Guwahati. Prior to joining CPA Global in 2011, he worked for Reliance Industries as a rotary engineer in charge of FCC and PRU units. He is a senior patent analyst and has worked on numerous patentability, freedom-to-operate and validity searches.

AREAS OF EXPERTISE INCLUDE:

- Automobile lamps
- Product development
- Component design, manufacture and testing
- Hose pipe design
- Machining
- Patent illustration
- AutoCAD
- CATIA
- Photoshop
- Adobe Illustrator
- 10 years' experience



Rajneesh Shah

Rajneesh Shah has a bachelor's degree in mechanical engineering from Jamia Millia Islamia University, New Delhi, and a certificate in General IPR from the World Intellectual Property Organization. Before joining CPA Global in 2006, he worked as an automotive engineer and in the manufacture of automobile lighting, and engaged in product development.

AREAS OF EXPERTISE INCLUDE:

- HVAC&R
- Fluid-handling and fluid-dispensing equipment
- Energy conversion
- Manufacturing and packaging
- Automotive
- Cleaning processes
- Bio-mechanical/surgical tools
- Apparel
- 6 years' experience



Kwok C. Wong

Kwok C. Wong holds a master's degree in engineering from the University of Wisconsin-Madison and a B.S. in mechanical engineering from Pennsylvania State University. He has extensive experience in HVAC&R and fluid-handling technologies, as well as diverse patent research experience in areas of mechanical engineering. Before joining CPA Global, Kwok worked at the USPTO, where he was a patent examiner.

AREAS OF EXPERTISE INCLUDE:

- Seals and joint packing
- Turbine labyrinth seals
- Brush seals
- Tools and appliances for food preparation
- Coffeemakers
- Bathroom apparatus
- Toilets and showers
- Mechanical signals and indicators
- Bio-mechanical
- Bone anchors
- Joint replacement
- 23 years' experience



John L. Beres

John L. Beres, a registered patent agent, earned a B.S. in mechanical engineering from Widener University in Chester, Pa. Before joining CPA Global, John worked as a patent analyst, performing searches in all mechanical technologies, with a focus in bio-mechanical. He worked for Littman Law Offices, Ltd., as a registered patent agent in areas including client consultation, search report evaluation and review, and foreign filings. He was a patent examiner at the USPTO for 12 years.