

# INTEMATIX PATENTS

## About Our Patents

### Intematix Intellectual Property Leadership



#### Patent Statistics

- Over 180 issued patents worldwide
- Over 290 pending patent applications
- More than 100 issued US patents
- Filed in all major markets including: The United States, Korea, Japan, Taiwan, China, and Europe

#### Product & Technology Families

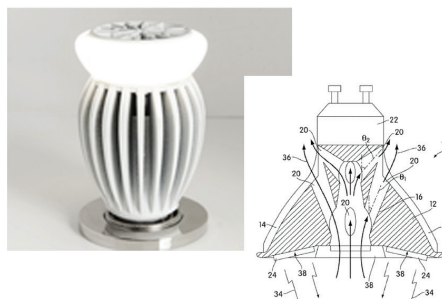
- **Phosphor Materials:** Composition; White Conversion Applications; and Phosphor Delivery Solutions
- **Lighting, Display & Phosphor Applications:** Lighting and Display Systems
- **Other:** Various technology, not directly related to phosphor solutions for LED lighting systems

Intematix's extensive Intellectual Property (IP) portfolio gives us competitive advantages in all of our product and application areas. Intematix IP includes key phosphor material compositions, including GAL, red nitrides, NYAG and silicate phosphors and LED applications. Moreover, we are committed to continuously increase the strength of our patent portfolio by investing in research and development dedicated to advancing phosphor materials, new innovative delivery systems, including remote phosphor and phosphor pastes, quantum dots and other important lighting materials, components, systems and applications. Our expertise includes: luminescent materials, light and color mixing, LED lighting assemblies and optics, displays and signs.

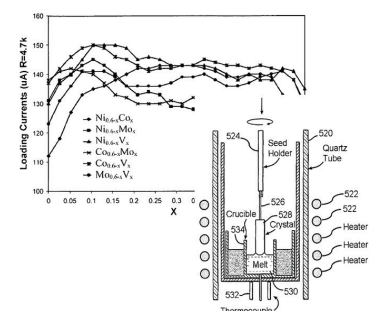
#### Phosphor Materials



#### Lighting, Display & Phosphor Applications



#### Other



## US Patent Collection: Phosphor Materials - Lighting, Display & Phosphor Applications - Other

Category	Number	Title
Phosphor Materials	D710,535	Optical Component for an LED Lamp
Phosphor Materials	8,783,887	Color Tunable Light Emitting Device
Phosphor Materials	8,779,685	High CRI White Light Emitting Devices and Drive Circuitry
Phosphor Materials	8,773,337	Color Temperature Tunable White Light Source
Phosphor Materials	8,740,400	White Light Illumination System with Narrow Band Green Phosphor and Multiple-Wavelength Excitation
Phosphor Materials	8,686,449	Light Emitting Device with Phosphor Wavelength Conversion
Phosphor Materials	8,679,367	Green-Emitting (oxy)Nitride-Based phosphor and Light-Emitting Device Using the Same
Phosphor Materials	8,663,502	Red-Emitting Nitride-Based Phosphors
Phosphor Materials	8,651,692	LED Based Lamp and Light Emitting Signage
Phosphor Materials	8,631,598	Light Emitting Sign and Display Surface Therefor
Phosphor Materials	8,628,255	Light Emitting Diode Lighting System
Phosphor Materials	8,616,714	Solid-State Lamps with Improved Radial Emission and Thermal Performance
Phosphor Materials	8,614,539	Wavelength Conversion Component with Scattering Particles
Phosphor Materials	8,610,341	Wavelength Conversion Component
Phosphor Materials	8,610,340	Solid-State Light Emitting Devices and Signage with Photoluminescence Wavelength Conversion
Phosphor Materials	8,604,678	Wavelength Conversion Component with a Diffusing Layer
Other	8,597,963	Manufacture of Light Emitting Devices with Phosphor Wavelength Conversion
Phosphor Materials	8,597,545	Red-Emitting Nitride-Based Calcium-Stabilized Phosphors
Lighting, Display & Phosphor Application	8,567,973	Multiple-Chip Excitation Systems for White Light Emitting Diodes (LEDs)
Lighting, Display & Phosphor Application	8,541,931	LED Based Lamp Including Reflective Hood to Reduce Variation in Illuminance
Phosphor Materials	8,539,702	Light Emitting Sign and Display Surface Therefor
Phosphor Materials	8,538,217	Light Emitting Diode Lighting System
Phosphor Materials	8,529,791	Green-Emitting, Garnet-Based Phosphors in General and Backlighting Applications
Phosphor Materials	8,507,047	Method and System of Manufacturing Photo-Luminescent Wavelength Conversion Component
Phosphor Materials	8,475,683	Yellow-Green to Yellow-Emitting Phosphors Based on Halogenated Aluminates
Other	8,450,026	Solid Electrolyte Fuel Cell
Phosphor Materials	8,414,796	Nano YAG:Ce Phosphors and the Method of Preparing the Same
Phosphor Materials	8,390,193	Light Emitting Device with Phosphor Wavelength Conversion
Phosphor Materials	8,376,580	Light Emitting Diode (LED) Based Lighting Systems

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## US Patent Collection: Phosphor Materials - Lighting, Display & Phosphor Applications - Other

Category	Number	Title
Other	8,358,141	Analytical Scanning Evanescent Microwave Microscope and Control Stage
Phosphor Materials	8,354,784	Solid State Light Emitting Devices with Photoluminescence Wavelength Conversion
Other	8,227,276	Manufacture of Light Emitting Device with Phosphor Wavelength Conversion
Phosphor Materials	8,302,336	Light Emitting Sign and Display Surface Therefor
Phosphor Materials	8,274,215	Nitride-Based Red-Emitting Phosphors in RGB (Red-Blue-Green) Lighting Systems
Other	8,227,276	Manufacture of Light Emitting Devices with Phosphor Wavelength Conversion
Other	8,227,269	Manufacture of Light Emitting Devices with Phosphor Wavelength Conversion
Other	8,211,825	Methanol Oxidation Catalyst
Other	8,211,593	Low Platinum Fuel Cell Catalysts and Method for Preparing the Same
Phosphor Materials	8,203,260	Color Temperature Tunable White Light Source
Lighting, Display & Phosphor Applications	8,197,105	Solid State Light Emitter Based Lamp
Phosphor Materials	8,188,502	Light Emitting Device with Phosphor Wavelength Conversion
Lighting, Display & Phosphor Applications	8,143,769	Light Emitting Diode (LED) Lighting Device
Phosphor Materials	8,133,461	Nano-YAG:Ce Phosphors and the Method of Preparing the Same
Phosphor Materials	8,067,884	LED Lighting Arrangement Including Light Emitting Phosphor
Other	8,049,996	Coherent Spin Valve and Related Devices
Other	8,022,009	Process for Synthesizing Composite Materials
Phosphor Materials	D650,120	Optical Component for an LED Lamp
Phosphor Materials	D650,119	Optical Component for an LED Lamp
Phosphor Materials	D650,118	Optical Component for an LED Lamp
Phosphor Materials	8,017,035	Silicate-Based Yellow-Green Phosphor
Phosphor Materials	7,972,030	Light Emitting Diode (LED) Based Lighting Systems
Other	7,945,335	Remotely RF Powered Conformable Thermal Applicators
Phosphor Materials	7,937,865	Light Emitting Sign and Display Surface Therefor
Phosphor Materials	7,922,937	Two-Phase Silicate-Based Yellow Phosphor
Phosphor Materials	7,915,627	Light Emitting Device with Phosphor Wavelength Conversion
Phosphor Materials	7,906,041	Silicate-Based Green Phosphors in Red-Green-Blue (RGB) Backlighting and White Illumination Systems
Phosphor Materials	7,887,719	Novel Phosphor Systems for a White Light Emitting Diode (LED)
Lighting, Display & Phosphor Applications	7,883,226	LED Signal Lamp
Other	7,846,862	Methanol Oxidation Catalyst

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## US Patent Collection: Phosphor Materials - Lighting, Display & Phosphor Applications - Other

Category	Number	Title
Phosphor Materials	7,845,839	Light Emitting Display
Lighting, Display & Phosphor Applications	7,830,434	Semiconductor Color Image Sensor Responsive at Shorter Wavelengths
Phosphor Materials	7,820,075	Phosphor Composition with Self-Adjusting Chromaticity
Phosphor Materials	7,755,276	Aluminate-Based Green Phosphors
Other	7,754,656	Production of Nano-Powder Based Combinatorial Libraries
Lighting, Display & Phosphor Applications	7,737,636	LED Assembly with an LED and Adjacent Lens and Method of Making Same
Phosphor Materials	7,736,536	Compositions Comprising a Mixture of a BAM Phosphor and at Least One Other Hexaaluminate
Other	7,723,260	Methanol Oxidation Catalyst
Other	7,704,923	High Throughput Screening of Catalysts Using Spin Resonance
Phosphor Materials	7,703,943	Color Tunable Light Source
Phosphor Materials	7,655,156	Silicate-Based Orange Phosphors
Phosphor Materials	7,648,650	Aluminum-Silicate Based Orange-Red Phosphors with Mixed Divalent and Trivalent Cations
Phosphor Materials	7,601,276	Two-Phase Silicate-Based Yellow Phosphors
Phosphor Materials	7,575,697	Silicate-Based Green Phosphors
Other	7,569,764	Solar Modules with Tracking and Concentrating Features
Lighting, Display & Phosphor Applications	7,557,356	Camera Based X-Ray Digital Image Detector
Other	7,550,963	Analytical Scanning Evanescent Microwave Probe and Control Stage
Phosphor Materials	7,541,728	Aluminate-Based Green Phosphors
Other	7,450,327	Coherent Spin Valve and Related Devices
Other	7,432,006	Electrochemical Probe for Screening Multiple-Cell Arrays
Phosphor Materials	7,399,428	Compositions Comprising High Light-Output Yellow Phosphors and Their Methods of Preparations
Phosphor Materials	7,390,437	Aluminate-Based Blue Phosphors
Other	7,351,444	Low Platinum Fuel Cell Catalysts and Method for Preparing the Same
Phosphor Materials	7,311,858	Silicate-Based Yellow-Green Phosphors
Other	7,282,911	Detection with Evanescent Wave Probe
Other	7,279,120	Doped CaWO <sub>4</sub> Tungstate Scintillator with Improved Radiation Hardness
Other	7,276,902	Detection with Evanescent Wave Probe
Other	7,271,574	Evanescent Microwave Probe with Enhanced Resolution and Sensitivity
Other	7,268,546	Detection with Evanescent Wave Probe

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## US Patent Collection: Phosphor Materials - Lighting, Display & Phosphor Applications - Other

Category	Number	Title
Phosphor Materials	7,267,787	Novel Phosphor Systems for a White Light Emitting Diode (LED)
Other	7,250,648	Ferroelectric Rare-Earth Manganese-Titanium Oxides
Other	7,148,683	Detection with Evanescent Wave Probe
Other	7,109,706	Integrated EWP-STM Spin Resonance Microscope
Other	6,946,835	Spatially Resolved Spin Resonance Detection
Other	6,924,150	Novel Magnetic Resonance Imaging Contrast System
Phosphor Materials	6,911,129	Combinatorial Synthesis of Material Chips
Other	6,693,426	Spatially Resolved Spin Resonance Detection
Other	6,641,940	Low Loss Dielectric Materials for Microwave Applications
Phosphor Materials	6,577,705	Combinatorial Material analysis Using X-Ray Capillary Optics
Other	6,532,806	Scanning Evanescent Electro-Magnetic Microscope
Other	6,463,186	Magnetically Controlled Optical Switch and Optical Attenuator
Other	6,173,604	Scanning Evanescent Electro-Magnetic Microscope
Lighting, Display & Phosphor Applications	D688,820	LED Lamp
Lighting, Display & Phosphor Applications	D688,390	LED Light Bulb
Lighting, Display & Phosphor Applications	D688,408	LED Light Bulb
Lighting, Display & Phosphor Applications	D688,407	LED Light Bulb

### About Intematix

Intematix develops essential phosphor materials to drive the LED lighting revolution. The company's comprehensive range of products and solutions can be used to build foundations for the world's LED lighting products and systems including general lighting, displays, automotive and many others. A broad selection of products and innovative delivery systems accelerate time-to-market, improve light quality and efficacy and reduce costs. For more information, please visit [www.intematix.com](http://www.intematix.com).

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