

2018 Patent Winners at PerkinElmer

Name: Hamid Badiei

Location: Woodbridge, Canada

Title: Detectors and methods of using them

Description: This patent introduces a mass spectrometer comprising a sample introduction system, an ion source fluidically coupled to the sample introduction system, a mass analyzer fluidically coupled to the ion source, and a detector fluidically coupled to the mass analyzer.



Names: Hamid Badiei and Kenneth Neubauer

Location: Woodbridge, Canada

Title: Systems and methods for detection and quantification of selenium and silicon in samples

Description: The patent described establishes a method for producing a stream of ions for detection and quantification of silicon in a petrochemical sample. This method introduces a petrochemical sample to an ionization source, thereby producing an ionized sample stream comprising a plurality of ionic species.

Names: Hamid Badiei and Samad Bazargan

Location: Woodbridge, Canada

Title: Systems and methods for automated analysis of output in single particle inductively coupled plasma mass spectrometry and similar data sets

Description: This invention relates to analysis of spectrometry data, introducing a method for automated analysis of spectrometry data corresponding to particles of a sample. Specifically, methods and systems for improved detection and quantification of selenium (Se) and/or silicon (Si) in samples. The use of carbon dioxide (CO₂) as a reaction gas in a reaction cell of an inductively coupled plasma mass spectrometer (ICP-MS) is found to effectively eliminate (or substantially reduce) interfering ionic species for the analytes Se and Si, particularly in samples with complex matrices, and/or in samples with low levels of analyte. This result is surprising in that carbon dioxide (CO₂) has not heretofore been

used in this capacity, as it was previously assumed to be ineffective due to presumed complex gas phase chemistry and side reactions that would limit its ability to reduce or eliminate interfering ionic species.

Name: Ralph Lance Carter

Location: Seer Green, United Kingdom

Title: Diffuse reflectance infrared Fourier transform spectroscopy

Description: This invention is a diffuse reflectance spectroscopy apparatus for use in analyzing a sample comprising: a sample receiving location for receiving a sample for analysis; an illumination arrangement for directing light from a light source towards a received sample.



Name: Ralph Lance Carter

Location: Seer Green, United Kingdom

Title: Sample spinners and spectrometers including sample spinners

Description: This patent relates to sample spinners and spectrometers or accessories for spectrometers including sample spinners, all for use in diffuse reflectance spectroscopy. Specifically, the invention includes a detachable diffuse reflectance spectroscopy sample spinner for use with a spectrometer in diffuse reflectance spectroscopy. The sample spinner comprises a sample receiving turntable mounted for rotation and a motor unit encompassing a motor for driving the turntable. The spinner can include wireless electrical power receiver means for receiving electrical power wirelessly for powering the motor.



Names: Kevin Groves and Milind Rajopadhye

Location: Hopkinton, MA

Title: Biocompatible fluorescent metal oxide nanoparticles

Description: The invention relates to highly fluorescent metal oxide nanoparticles to which biomolecules and other compounds can be chemically linked to form biocompatible, stable optical imaging agents for in vitro and in vivo applications. The fluorescent metal oxide nanoparticles may also be used for magnetic resonance imaging (MRI), thus providing a multi-modality imaging agent.

Names: Charles Jolliffe and Gholamreza Javahery

Location: Woodbridge, Canada

Title: Mass analyzer interface

Description: This patent describes a mass analyzer that includes a desolvation chamber into which an upstream gas is injected to provide a counter-flow to said downstream flow in the chamber. The counter-flow may slow the downstream flow of solvated ionized particles in the chamber, while allowing lighter desolvated ions to travel toward an outlet aperture of the desolvation chamber.



Name: Peet Kask

Location: Tallinn, Estonia

Title: Systems and methods for automated segmentation of individual skeletal bones in 3D anatomical images

Description: The patent details a method of performing image segmentation to automatically differentiate individual bones in an image of a skeleton or partial skeleton of a subject, the method comprising: receiving, by a processor of a computing device, a three-dimensional image of a subject; applying, by the processor, one or more second derivative splitting filters to the image to produce a split bone mask for the image with bone boundaries removed; determining, by the processor, a plurality of split binary components of the split bone mask by performing one or more morphological processing operations; and performing, by the processor, a region growing operation using the split binary components of the split bone mask as seeds, thereby producing a segmentation map differentiating individual bones in the image.



Names: Joseph Krebs and Paul Morrison

Location: Austin, TX

Title: Production of anti-peptide antibodies

Description: Anti-peptide antibodies (APAs) are extremely important tools for biomedical research. Many important techniques, such as immunoblots, ELISA immunoassays, immunocytochemistry, and protein microarrays are intrinsically linked to APA function and completely dependent on APA quality. Unfortunately, not all commercially-available APAs have good antigen binding characteristics; as a result, researchers are often unable to perform high quality protein analysis experiments. This patent introduces a new method for the scalable production of polyclonal APAs using recombinant antigens. These recombinant peptide antigens have several advantages over traditional peptide antigens which improve the ease and speed of antibody production. The recombinant antigens can be scalably produced and purified much faster than traditional synthetic peptide-conjugates.



Name: Ville Laitala

Location: Turku, Finland

Title: Reducing measurement variation related to optical measure of sample material

Description: This invention proposes a method for reducing measurement variation related to optical measuring of sample material, including: punching or cutting off a piece from a sample carrier onto which liquid sample material has been impregnated and dried; and conveying the piece of the sample carrier to a sample well where at least part of the sample material elutes from the piece of the sample carrier in measurement solution contained by the sample well; wherein the method comprises the following steps: carrying out at least two optical measurements from at least two different capture ranges whose center points are inside the sample well that contains at least the sample material and the piece of the sample carrier so as to obtain at least one optical measurement whose capture range is outside the piece of the sample carrier, each capture range being a range from which radiation is captured in the respective optical measurement, the capture range of each optical measurement being an ellipse having a primary axis longer than a secondary axis and the capture ranges of two optical measurements are situated on opposite fringes of an interior of the sample well so that the secondary axes of the ellipses representing the capture ranges of these optical measurements coincide substantially with a diameter line of



the sample well; and subsequently forming a measurement result from results of the at least two optical measurements in accordance with a pre-determined rule, whereby measurement variation related to optical measuring of the sample material and caused by the piece of the sample carrier contained by the sample well is reduced.

Name: Ville Petteri Laitala

Location: Turku, Finland

Title: Method and a device for cross-talk correction of measured intensities

Description: This patent introduces a method for cross-talk correction of intensities measured on mutually separate detection wavelength bands is presented. Each detection wavelength band relates to one of analyte-specific probe-populations contained by a sample to be analyzed.



Name: Rosario Mannino

Location: Shelton, CT

Title: Fluid chromatography injectors and injector inserts

Description: The patent described introduces a fluid injector that includes an injector insert inlet coupled to a separate injector insert outlet to provide a channel between the coupled injector insert inlet and the injector insert outlet, wherein the injector insert inlet is constructed and arranged to couple to an injector assembly to fluidically couple a fluid flow path of the injector insert to a fluid flow path of the injector assembly so that a top surface of the injector insert inlet will be exposed to sample in the fluid flow path of the injector assembly, wherein the top surface of the injector insert inlet comprises a substantially inert metal material that is exposed to sample in the fluid flow path of the injector assembly, and wherein the injector insert outlet and the channel are configured to receive a column to fluidically couple the received column to the injector insert inlet to provide fluidic coupling between the injector insert inlet and the column to permit sample to flow to the column.



Name: Timothy Neal

Location: Shelton, CT

Title: Autosampler and gas chromatography system and method including same

Description: This patent proposes a gas chromatography system that includes at least one gas chromatography subsystem including at least one injector port, and an auto sampler.



Name: Narasimhachari Narayanan

Location: Hopkinton, MA

Title: 4, 4-disubstituted cyclohexyl bridged heptamethine cyanine dyes and uses thereof

Description: This invention relates to a family of compounds that comprise fluorescent cyanine dyes. The compounds are near infrared absorbing heptamethine cyanine dyes with a 4,4-disubstituted cyclohexyl ring as part of the polymethine chromophore. The compounds are generally hydrophilic and can be chemically linked to biomolecules, such as proteins, nucleic acids, and therapeutic small molecules. The compounds can be used for imaging in a variety of medical, biological and diagnostic applications.



Name: Jussi Petteri Lehtonen and Mika Olavi Routamaa

Location: Turku, Finland

Title: Method and a switch device for producing an electrical signal in response to mechanical force

Description: This patent introduces a switch device for producing one or more electrical signals in response to mechanical force includes a body-part and one or more electric transducers connected to the body-part and arranged to produce the one or more electrical signals in response to mechanical force directed to the body-part.

Name: Andrew Smellie

Location: Waltham, MA

Title: Systems and methods for translating three dimensional graphic molecular models to computer aided design format

Description: This patent introduces methods, and an apparatus that allow a user to convert various styles of three dimensional graphic representations of molecular models to computer aided design format to enable printing of a physical model using three-dimensional printing equipment such as rapid prototyping equipment, additive manufacturing equipment, and/or three dimensional printers.



Name: Andrew Smellie

Location: Waltham, MA

Title: Systems, methods, and apparatus for drawing chemical structures using touch and gestures

Description: The patent described details systems, methods, and apparatus that allow users to draw and edit a chemical structure using one or more gestures performed on an input interface, such as a touch pad or touch screen.



Name: Michael L. Delvecchio and Paul L. St. Cyr

Location: Shelton, CT

Title: Sample platforms and methods of using them

Description: The patent described introduces sample platforms that are configured to permit electrical coupling between a sample support and electrical ground. In some examples, a sample platform configured to receive a sample support effective to retain a sample for direct sample analysis and comprising an aperture for receiving at least one electrical coupler configured to engage the sample support and provide electrical coupling between the sample support and ground is described.

Name: Roland Stange

Location: Hamburg, Germany

Title: Apparatus for structured illumination of a specimen

Description: This invention includes an apparatus for structured illumination of a specimen comprises an illumination device for generating illumination beams.



Name: Winfried Stocker

Location: Lubeck, Germany

Title: Device and method for reactions between a solid and a liquid phase

Description: The invention relates to a device for bringing an immobilized reactant into contact with at least one fluid. The invention also relates to a method for bringing an immobilized reactant into contact with at least one fluid, comprising the following steps: immobilizing the reactant on the adhesion surface of at least one object carrier suitable for introduction into the holding device of the device according to the invention; (provided that the preceding steps were carried out outside of the device according to the invention) introducing the object carrier into the holding device of the device according to the invention, preferably via a transport device in the device according to the invention; introducing the at least one fluid via the supply element in the direction of the outlet opening, until the at least one fluid comes into contact with the immobilized reactant.



Name: Churl Oh and Yong Wang

Location: Waltham, MA

Title: System and method for uploading and management of contract-research-organization data to a sponsor company's electronic laboratory notebook

Description: This patent introduces a system and method for comprehensive data synchronization management between a sponsor-company's central electronic-laboratory-

notebook system and either multiple contract-research-organizations or research sites. The invention described includes a method for secure upload and management of data from a plurality of contract research organizations to a centralized electronic laboratory notebook of a sponsor company.
