UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES WILLIS

Appeal 2009-015370
Application 10/447,228
Technology Center 1700

Decided: March 18, 2010

Before MICHAEL P. COLAIANNI, BRADLEY R. GARRIS, and TERRY J. OWENS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

The Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-10, 12-16, 40-49 and 51-57. Claims 17-39 stand withdrawn from consideration by the Examiner, and claims 11 and 50 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellant claims a data collection system and a plasma processing system that includes the data collection system. Claim 40, which claims the data collection system, is illustrative:

40. An improved data collection system comprising:

a measurement device configured to provide a set of spectral data relating to a plasma process in a plasma chamber at each of a plurality of process times; and

a controller coupled to said measurement device and providing an algorithm configured to extract peak data from each set of spectral data in order to provide reduced data for improved handling, storage and manipulation.

The References

Honigs	5,251,006	Oct. 05, 1993
Okazaki	5,949,804	Sep. 07, 1999
Kagoshima	2003/0003607 A1	Jan. 02, 2003

The Rejections

The claims stand rejected as follows: claims 1-10, 40-49, 56 and 57 under 35 U.S.C. § 102(e) over Kagoshima, and claims 12-16 and 51-55 under 35 U.S.C. § 103 over Kagoshima in view of Honigs and Okazaki.

OPINION

The Appellant argues two groups of claims: 1) independent claims 1 and 40, and 2) dependent claims 56 and 57 (Br. 4-8). Although additional references are applied to claims 12-16 and 51-55, the Appellant does not provide a substantive argument as to the separate patentability of those claims (Br. 8). We therefore limit our discussion to one claim in each of the

argued groups, i.e., claims 40 and 57. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2007).

Claim 40

Kagoshima discloses a plasma processing system comprising an in-situ sensor that measures plasma luminescence during the processing operation (¶ 0044). "The plasma luminescence includes information about etchants or ions which dominate the process, and thus a change in the processed result can be estimated on the basis of a change in the peak intensity of the plasma luminescence or in the spectrum shape." *See id.* "[S]ince a change in the plasma luminescence is slight, it is desirable to apply some numerical data processing operation to the plasma luminescence to extract a changed component in the luminescence spectrum with a high sensitivity" (¶ 0045). "[W]hen a statistical analysis technique, e.g., main component analysis is employed, only changed one of many luminescence peak components can be filtered and extracted." *See id.* Kagoshima's Figure 8 shows, in the first row, a predetermined processing shape and, in the second and third rows, variance in the luminescence peak due to side wall deposits (¶ 0046). Kagoshima changes the processing recipe to correct for the variance in luminescence (¶ 0047, Fig. 8).

The Appellant argues that Kagoshima's extraction of a changed component in the luminescence spectrum (¶ 0045) does not "extract peak data" as that claim term would have been understood by one of ordinary skill in the art (Reply Br. 3).[1] The Appellant argues that in view of the

[1] The Reply Brief cited herein is the Reply Brief filed on May 1, 2007. The Reply Brief filed on May 1, 2009 repeats an argument in the May 1, 2007 Reply Brief and otherwise relies upon the May 1, 2007 Reply Brief.

Appellant's Specification, one of ordinary skill in the art would understand that extracting peak data from spectral data requires determining and extracting some identifying characteristic, such as center wavelength, intensity or width, of a peak in a spectrum (Reply Br. 2).

During patent prosecution, claims are to be given their broadest reasonable interpretation consistent with the Specification, as the claim language would have been read by one of ordinary skill in the art in view of the Specification. *See In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989); *In re Sneed*, 710 F.2d 1544, 1548 (Fed. Cir. 1983). The Appellant's Specification refers to wavelength, intensity and width as exemplary peak parameters (¶ 0060), but does define the claim term "peak data" as limited to those parameters or to an identifying characteristic. Hence, the claim term "extract peak data", when given its broadest reasonable interpretation consistent with the Appellant's Specification, encompasses Kagoshima's extraction of a changed peak component in the luminescence spectrum (¶ 0045).

The Appellant argues that Kagoshima characterizes the main component analysis (¶ 0045) as a PCA (Principle Component Analysis) (Fig. 8) and that

> PCA does not "extract peak data from each set of spectral data." On the contrary, PCA is used to identify regions of the spectral space for the plurality of spectral data sets that contribute most to the variance from one spectral data set to another spectral data set. That is, PCA illuminates regions where variations occur between spectrums, regardless of whether these regions include peaks. PCA techniques are simply not sensitive to intensity peaks (i.e., sharp gradients in intensity in wavelength space), and therefore cannot determine a characteristic of a peak in the spectrum. [Reply Br. 2-3]

The Appellant's argument is not well taken because it is merely unsupported attorney argument, and arguments of counsel cannot take the place of evidence. *See In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984). Regardless, even if PCA illuminates regions whether or not there is a peak, Kagoshima's regions from which luminescence peak components are extracted include a peak (Fig. 8). Hence, Kagoshima extracts peak data from each set of spectral data as required by the Appellant's claim 40 (¶0045-0046; Fig. 8).

The Appellant argues that what Kagoshima extracts is a changed component of the spectrum, not the peak itself (Reply Br. 3).

The Appellant's claim 40 recites "extract peak data", not "extract the peak itself". Kagoshima's extraction of a changed component of a luminescence peak (¶ 0045) is extraction of peak data.

The Appellant argues that if Kagoshima's PCA technique were sensitive to peak data, then it would extract the three peaks to the left of the changed luminescence peak in Figure 8 (Reply Br. 3).

The Appellant's claim term "extract peak data from each set of spectral data" does not require extraction of data from every peak in the spectral data. Hence, even if Kagoshima's technique is not sensitive to unchanged peaks, Kagoshima's extraction of data from a changed luminescence peak in the spectrum (¶ 0045) meets that claim requirement.

The Appellant argues that "while Kagoshima et al. discloses obtaining spectral data, this reference does not extract peak data from each data set, but rather identifies differences in peaks through a comparison of spectral data sets with one another" (Br. 5).

As pointed out above, that identification of differences in peaks involves extraction of peak data from each set of spectral data, which is what the Appellant's claim 40 requires.

For the above reasons we are not persuaded of reversible error in the rejection of claim 40.

Claim 57

Claim 57, which depends from claim 40, requires that "said controller is configured to further reduce the reduced data by providing a single list of peak measured points and associating extracted peak data for each set of spectral data with the single list of peak measurement points."

The Appellant argues that the Examiner has acknowledged that none of the cited references discloses the limitation in claim 57 (Br. 7).

In the Examiner's Answer, the Examiner argues that "as spectroscopic data is determined periodically for statistical analysis, a list is inherently created. Without such a list no statistical processing could result" (Ans. 9). Because that argument is plausible and is not challenged by the Appellant in the Reply Brief (Reply Br. 4), we accept it as fact. *See In re Kunzmann*, 326 F.2d 424, 425 n.3 (CCPA 1964).

Accordingly, we are not convinced of reversible error in the rejection of claim 57.

DECISION/ORDER

The rejections of claims 1-10, 40-49, 56 and 57 under 35 U.S.C. § 102(e) over Kagoshima, and claims 12-16 and 51-55 under 35 U.S.C. § 103 over Kagoshima in view of Honigs and Okazaki are affirmed.

It is ordered that the Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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