to laser processing system **12**, such as through automatic loading system **14** and data conveying step **70**.

In loading step **72**, automatic loading system **14** finishes loading work piece **28** onto chuck **24** of laser processing system **12** (if not already done during the measurement cycle) and informs laser processing system **12** through instruction step **74** that work piece **28** has been loaded.

In recipe determination step **76**, laser processing system **12** uses the measurement information to look up in a table, such as exemplified in FIGS. **2**A and **2**B, a preferred recipe for processing work piece **28** or preferred recipes for processing its regions or intended target or feature locations. In processing step **78**, laser processing system **12** processes work piece **28**, its regions, or intended target or feature locations in accordance with the recipes obtained from the look up table.

In instruction step **80**, laser processing system **12** notifies automatic loading system **14** that work piece **28** has been processed. Automatic loading system **14** unloads work piece from chuck **24** in unloading step **82** and notifies laser processing system **12** that work piece **28** has been unloaded in notification step **84**. Laser processing system **12** is then ready to request the loading of a new work piece **28**.

Skilled persons will appreciate that the communication pathways may vary depending on the capabilities of the various system components. In particular, skilled person will appreciate that various software for implementing the flow process may be primarily associated with a single system or subsystem such as laser controller **26**. Alternatively, the software may be located wholly or partly on various systems, subsystems, or subsystem components. For example, cameras **46**, **50**, and **52** may contain measurement processing software as well as image processing software, or all or most of the data processing can done or governed by the laser controller **26**. Laser controller **26** may also directly ask measurement system **16** to make the measurements rather than the instructions coming from automatic loading system **14**, for example. Numerous variations are possible.

Skilled person will also appreciate that the recipes provided by the look up tables are parameter guidelines and that the recipes may be changed in real time based on process monitoring, for example. Such process monitoring may track one or more of degradation of optics within laser processing system **12**, variations in the performance of laser **18**, or abbe or other positioning errors associated with beam and work piece positioning system **20**, for example. U.S. Pat. No. 7,244,906 of Jordens et al. describes in detail how some of these real time adjustments may be implemented.

It will be obvious to those having skill in the art that many changes may be made to the details of the above-described embodiments of this invention without departing from the underlying principles thereof. The scope of the present invention should, therefore, be determined only by the following claims.

The invention claimed is:

1. A method for processing multiple work pieces with a laser micromachining system, comprising:

receiving a first work piece from a supply of multiple work pieces, including at least first and second work pieces, wherein each work piece has multiple characteristics, including different first and second characteristics, wherein the first characteristic of the first work piece has a first primary value and the second characteristic of the first work piece has a first secondary value, wherein the first characteristic of the second work piece has a second primary value and the second characteristic of the second work piece has a second secondary value, wherein the first primary value is different from the second primary value, and wherein the first secondary value is different from the second secondary value;

acquiring information regarding the first and second characteristics of the first work piece;

assigning a first primary measurement value to the first characteristic of the first work piece based on the quality of the first characteristic of the first work piece;

assigning a first secondary measurement value to the second characteristic of the first work piece based on the quality of the second characteristic of the first work piece;

selecting from a look up table a first laser processing recipe associated with the first primary and first secondary measurement values, the first processing recipe including multiple parameters for processing the first work piece to create a feature having predetermined attributes in the first work piece;

employing a laser system including a beam positioning system and/or a substrate positioning system to create one or more of the features having the predetermined attributes in the first work piece;

receiving the second work piece from the supply of multiple work pieces;

acquiring information regarding the first and second characteristics of the second work piece;

assigning a second primary measurement value to the first characteristic of the second work piece based on the quality of the first characteristic of the second work piece;

assigning a second secondary measurement value to the second characteristic of the second work piece based on the quality of the second characteristic of the second work piece;

selecting from the look up table a second laser processing recipe associated with the second primary and second secondary measurement values, the second processing recipe including multiple parameters for processing the second work piece to create the feature having the predetermined attributes in the second work piece, wherein the second processing recipe is different from the first processing recipe; and

employing the laser system including the beam positioning system and/or the substrate positioning system to create one or more of the features having the predetermined attributes in the second work piece.

2. The method of claim **1** in which the laser micromachining system is a via drilling system and the feature is a via.

3. The method of claim **1** in which the work piece is a printed circuit board or a semiconductor wafer.

4. The method of claim **1** in which the first characteristic is thickness or shininess.

5. The method of claim **1** in which the first characteristic is thickness and the second characteristic is shininess.

6. The method of claim **1** in which the look up table employs a range of measurement values that includes the first primary measurement value associated with the first processing recipe.

7. The method of claim **1** in which multiple measurement values for each of the first and second characteristics are assembled into a matrix and the first processing recipe is associated with a correlation of the first primary measurement value with the first secondary measurement value.

8. The method of claim **1** in which information is acquired with one or more cameras.

9. The method of claim **1** in which each of the first and second work pieces is in more than one position while the information is acquired about the first characteristic.