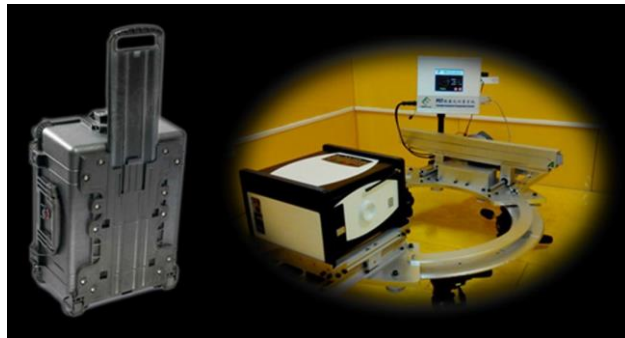


(8)

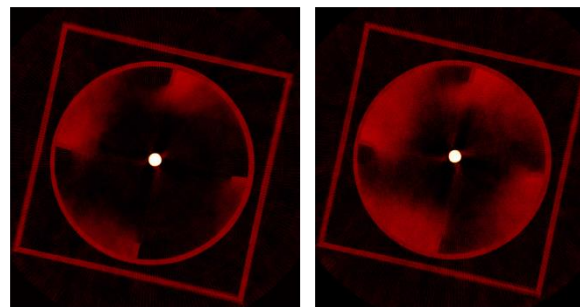
## Portable X-ray Computed Tomography

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With the advantages of non-intrusiveness and high spatial resolution, X-ray Computed Tomography (XCT) has been widely used in various fields. But the traditional XCT is notorious for its huge size, long tuning period and potential safety damage to operator. Besides that, heavy high voltage system and numerous control lines for system control and data transfer are must-have for XCT. This makes it almost impossible for outdoor and field measurement applications. To solve this problem, a portable Computed Tomography (PCT) based on X-ray was designed and the prototype scanner was developed (Fig.1). Powered by lithium polymer battery and controlled via WIFI signal, this scanner can be easily assembled for measurement and disassembled into a roller luggage for transportation. With the patented parameters determination method based on raw projection and improved reconstruction algorithm, the measurement accuracy gets guaranteed. A continuous stirred tank reactor was scanned with the newly developed PCT (Fig.2). The measurement result shows that this PCT scanner is easy to use and has a spatial resolution of 1mm, and has lots of potential applications in multiphase flow study.



**Figure 1.** The PCT scanner can be easily disassembled into a roller luggage



**Figure 2.** Sectional distribution measurement of a CSTR with PCT, 20% solids (left) and 35% solids (right)

### References:

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