

# Common Dataset for Instrumented Indentation Testing (dataset.zip)

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## 1. What is this?

This is a common dataset for Instrumented Indentation Testing (IIT) and can be used as a sample dataset for IIT programs. This data is created by a simple model and is *not* obtained experimentally.

## 2. Specimen/Material properties

| Material  | Poisson's ratio | Young's modulus | Hardness | Remarks            |
|-----------|-----------------|-----------------|----------|--------------------|
| reference | 0.20            | 80 GPa          | -        |                    |
| target1   | 0.30            | -               | -        |                    |
| target2   | 0.15            | -               | -        |                    |
| diamond   | 0.07            | 1140 GPa        | -        | Berkovich indenter |

## 3. Data

Testing force is 1, 2, 5, 10, 20, 50, 100, 200 mN for all specimens (reference, target1, and target2). The same plot data in the following format is available in each directory.

| Directory | Separator | Column 1                | Column 2   | Column 3  |
|-----------|-----------|-------------------------|------------|-----------|
| csv1      | ,         | Depth ( $\mu\text{m}$ ) | Force (mN) | -         |
| csv2      | ,         | Force (mN)              | Depth (nm) | Time (ms) |
| tsv1      | TAB       | Depth (nm)              | Force (mN) | -         |

Please ask the organizer for other formats.

## 4. Analysis

(1) Please use the reference specimen to calibrate the area function  $A(h)$  of the indenter and the frame compliance  $C_F$ .

(2) Please report calculated Young's modulus and Indentation Hardness  $H_{IT}$  for all curves, including the reference specimen.