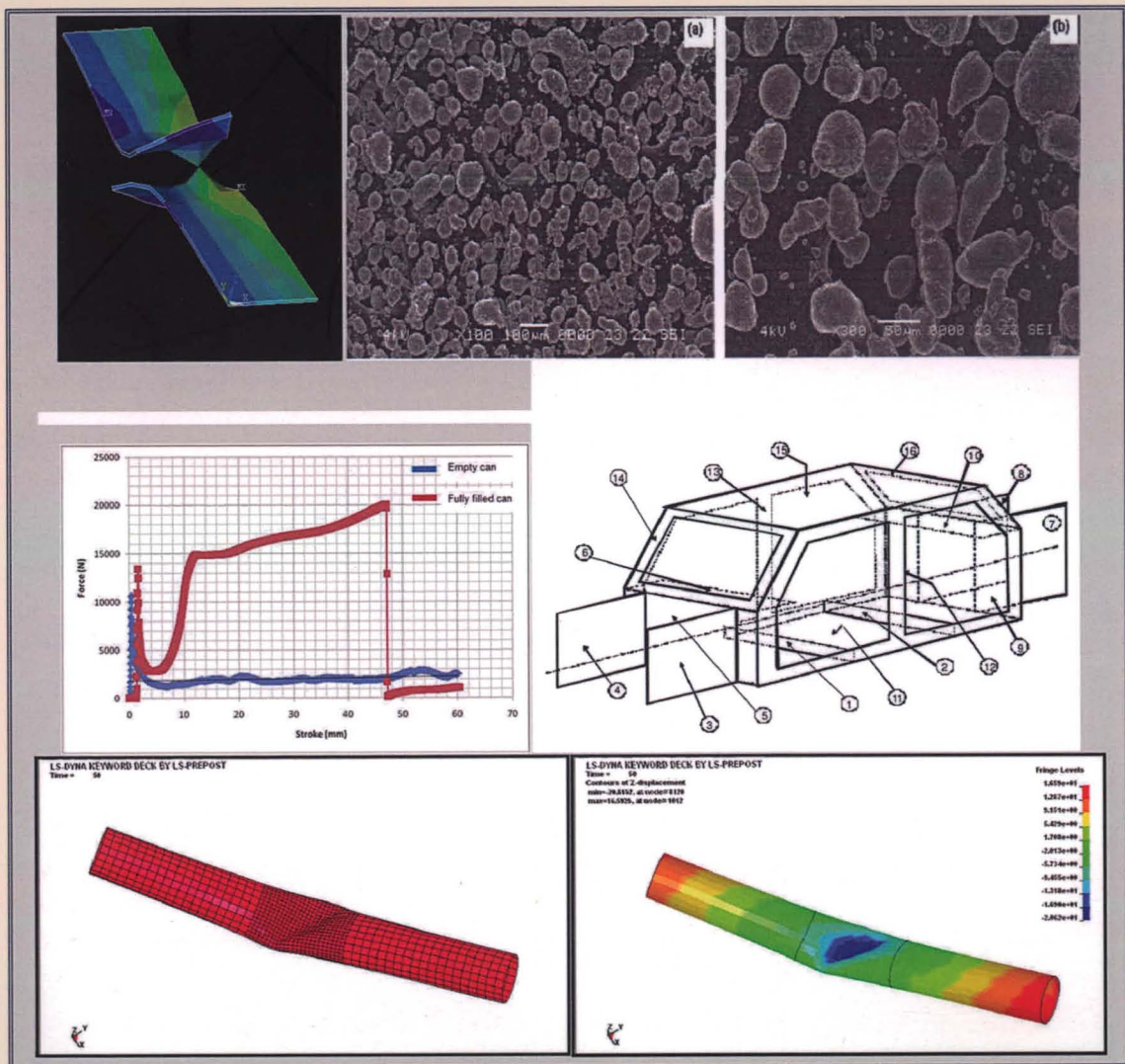


# ADVANCED TOPICS IN MECHANICAL BEHAVIOR OF MATERIALS



Edited by

**Meftah Hrairi**



IIUM PRESS

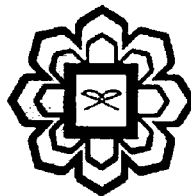
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

ADVANCED TOPICS IN MECHANICAL BEHAVIOR OF MATERIALS

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Edited by

Meftah Hrairi



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## EXPERIMENTAL RESULTS OF EMPTY AND WATER FILLED CYLINDRICAL SHELL BUCKLING FOR 50mm STROKE

*Qasim H. Shah, Hasan M.Abid, Adib B. Rosli*

### 1. INTRODUCTION

The objective of this experiment is to find out the types and properties of the materials used in this study. This can be known by measuring the mechanical properties and observing the characteristics of the material. The most fundamental strengths of a material are the yield strength and ultimate tensile strength. Therefore, the relation between stress and strain becomes an important characteristic of the material. A tensile test can determine a stress-strain diagram of the material. Then the experimental result will be compared with numerical simulation results.

### 2. COMPRESSION TEST

A compression test determines behavior of materials under crushing loads. Circular cylindrical cans were compressed and the deformation at various compression rates and strokes were recorded. Graphs of compressive stress and strain were obtained and used to determine the effect of fluid in the cans under applied axial compressive load. The test was done for different volumes of fluid with various speeds and strokes.

### 3. COMPRESSION FOR 50MM STROKE, SPEED = 10 MM/MIN

#### 3.1 *Half filled container*

Figure 1 shows the side view of the compressed half filled can while Figure 2 depicts the graph of force vs. stroke for the same case.