

Calcination behaviour of lumpy limestones from different origins

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Introduction.

- Lime is an important raw material in various industries such as flue gas desulphurization, metallurgy, construction and manufacturing of paper.
- Quality of the product lime is the major aspect of the calcination process.

Problem Definition

- Quality of the product lime
- Hard burnt or soft burnt
- Shaft kilns or Rotary kilns

Objectives

- Determination of the material properties
- Influence of process parameters on the calcination process
- Modeling of micro level lime calcination process

Cooperation

Mr. Robin Gröpler

Experimental Setup

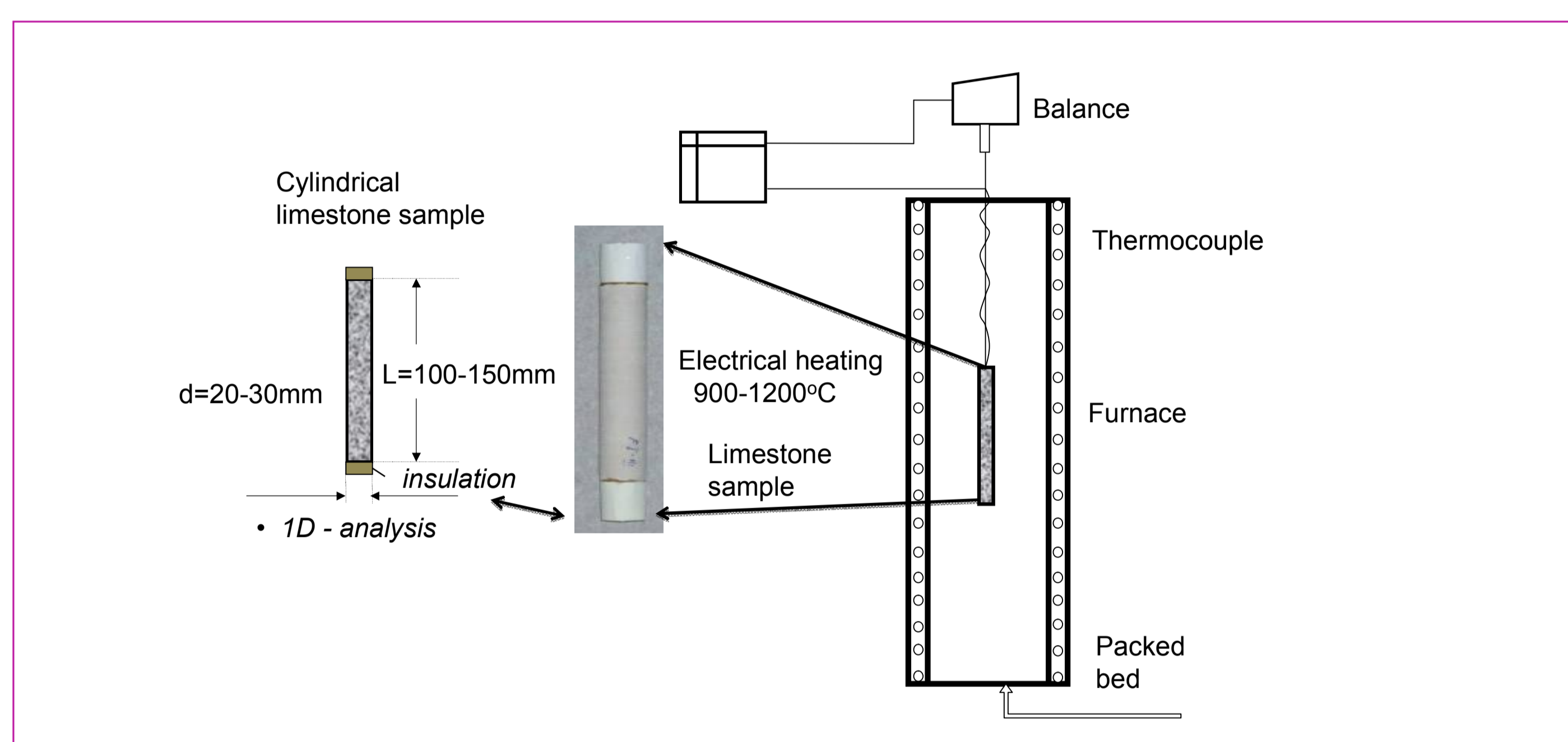


Figure 1. Laboratory experimental set up.

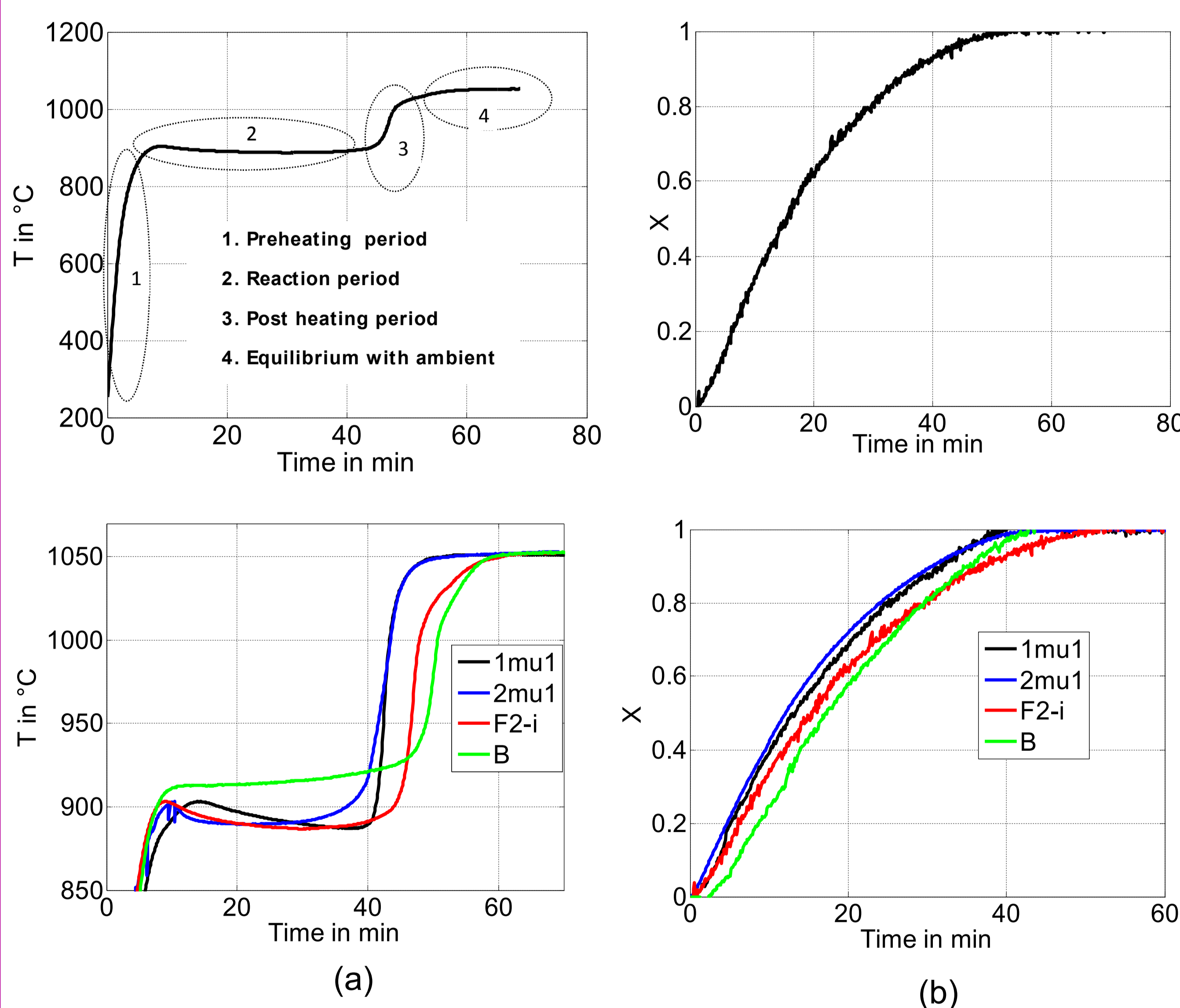


Figure 2. Measured core temperature and conversion profiles of lime have been shown in above plots (a) and (b) respectively.

Analytical Description

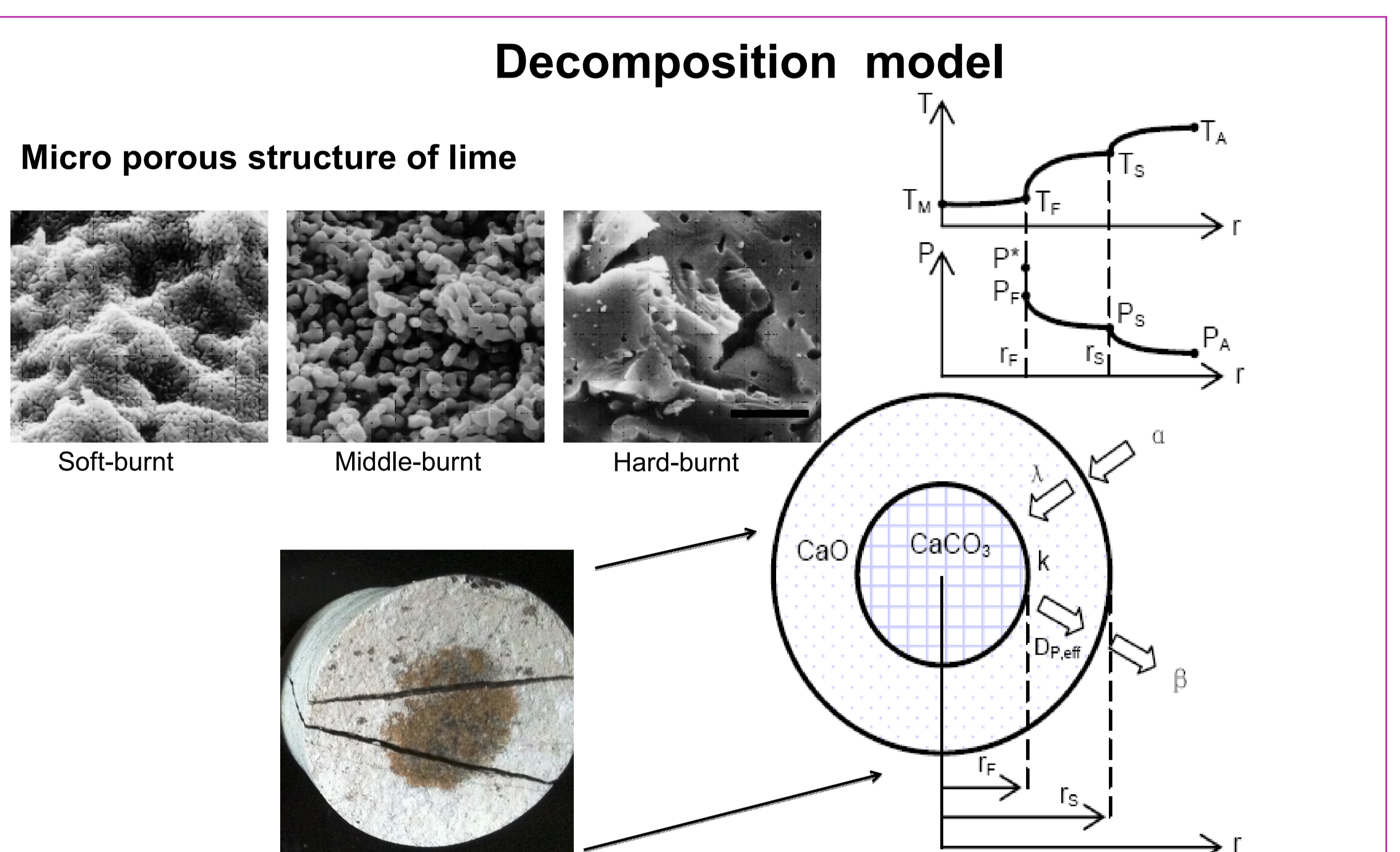


Figure 3. Schematic representation of sub processes.

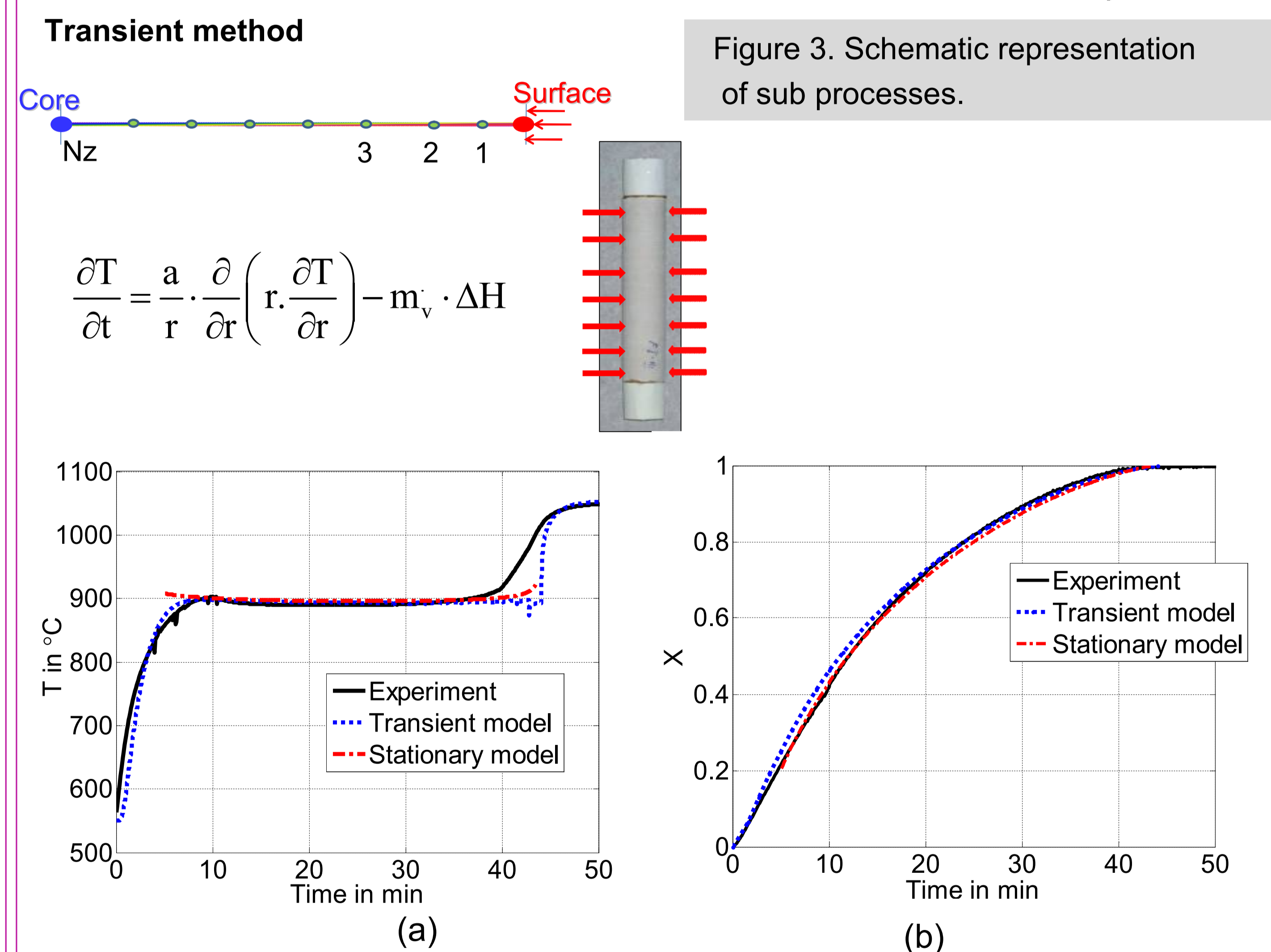


Figure 4. Measured and predicted core temperature and conversion profiles of a lime have been shown in above plots (a) and (b) respectively.

Results and Discussion

- Paper no. AJTEC2011-44572 pp. T10130-T10130-6, ASME/JSME 2011 8th Thermal Engineering Joint Conference (AJTEC2011), March 13–17, 2011, Honolulu, Hawaii, USA
- ECCOMAS Special Interest Conference, Numerical Heat Transfer 2012, 4–6 September 2012, Gliwice–Wroclaw, Poland

Conclusions

- The results are useful for lime industry to tune the operating parameters for their calcination process
- Lime association Germany (Bundesverband der Deutschen Kalkindustrie e.V.)