

Chapter 2

Nonlinear Process Identification

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2.1 Introduction

Most, if not all, of the nonlinear process control strategies described in this book require an explicit mathematical model of process dynamics. This chapter is concerned with the development of models suitable for use in these control system design methodologies. Many of the key issues in the discussions that follow — motivation, methodology, open questions — may be related to the “process characterization cube” shown in Fig. 2.1.

The three axes of this cube correspond to the following three process characteristics:

1. degree of dynamic complexity;
2. degree of nonlinearity;
3. degree of interaction.

