

## LIST OF TABLE

Table 1. 1 Fuel quality specifications for gasoline and diesel in India.....	12
Table 1. 2 Octane numbers (RON) of the hydrocarbons .....	14
Table 1. 3 Operating conditions and feed limitations for the current conventional isomerization Catalysts .....	18
Table 2.1 Various Catalysts for Isomerization of Alkanes.....	24
Table 2.2 Sulphated Zirconia Based Catalyst in Various Conversion Processes .....	32
Table 2.3 Percentage of Bronsted type <sup>a</sup> Acid Sites .....	47
Table 2.4 Effect of calcination temperature on acid strength before and after sulphation	48
Table 4.1 Physico - chemical properties of hydrothermal synthesized samples (ZT) ....	107
Table 4.2 Physico - chemical properties of microwave synthesized samples (ZM).....	108
Table 4.3 Physico - chemical properties of sample synthesized by precipitation method (ZP) .....	109
Table 4.4 Physico - chemical properties of samples synthesized by sol-gel Process (ZG) .....	110
Table 5.1 Reaction conditions Vs conversion for SZTW10 Catalyst.....	122
Table 5.2 Reaction conditions Vs conversion for SZTW10 Catalyst.....	122
Table 5.3 Reaction conditions Vs conversion for SZTW10 Catalyst.....	122
Table 5.4 Reaction conditions Vs conversion for SZTW20 Catalyst.....	126
Table 5.5 Reaction conditions Vs conversion for SZTW20 Catalyst.....	126
Table 5.6 Reaction conditions Vs conversion for SZTW20 Catalyst.....	126
Table 5.7 Reaction conditions Vs conversion for SZTW30.....	129
Table 5.8 Reaction conditions Vs conversion for SZTW40.....	129
Table 5.9 Reaction conditions Vs conversion for SZTW50.....	130
Table 5.10 Reaction conditions Vs conversion for SZTW55.....	130
Table 5.11 Reaction conditions Vs conversion for SZTW60.....	131
Table 5.12 Reaction conditions Vs conversion for SZMW55.....	134

Table 5.13 Reaction conditions Vs conversion for SZPW55 .....	136
Table 5.14 Reaction conditions Vs conversion for SZGW55.....	137

## LIST OF SCHEME

Scheme 2.1 Structure of Sulphated Zirconia [Kumbhar et al., 1990].....	36
Scheme 2.2 Lewis and Bronsted acid sites in SZ by Davis et al. 1994 .....	41
Scheme 2.3 Lewis and Bronsted Acid Site in Sulphated Zirconia [Hino and Arata, 1990] .....	42
Scheme 2.4 Model for the interconversion of Lewis to Bronsted acid sites [Hino et al., 1990] .....	43
Scheme 2.5 Three different models for the active site on sulphated zirconia [Kustov et al., 1994] .....	43
Scheme 2.6 Model of the active site in which combine Lewis and Bronsted sites in close proximity by [Adeeva et al., 1995] .....	44
Scheme 2.7 The Classical Bi-Functional Mechanism .....	51
Scheme 2.8 Acid catalyzed mechanism for n-hexane isomerization [Bouiti et al., 2003]	52
Scheme 5.1 Mechanism of isomerization in presence of TPA.....	141