

**AN INVESTIGATION  
INTO  
THE ION EXCHANGE, PROTON CONDUCTION  
AND  
CATALYTIC BEHAVIOUR  
OF  
CERIUM (IV) AND THORIUM (IV) PHOSPHATES**

**A  
Thesis  
Submitted  
to  
The Maharaja Sayajirao University of Baroda**

**For  
The Degree of  
DOCTOR OF PHILOSOPHY  
in  
Applied Chemistry  
by**

**TARUN F. PARANGI**

**Applied Chemistry Department  
Faculty of Technology and Engineering  
The Maharaja Sayajirao University of Baroda  
Vadodara - 390001, Gujarat, India**

**APRIL 2014**