

Preface

This book is intended for the practicing microelectromechanical sensor designer as well as engineers and engineering managers in other fields. This book provides an introduction to harsh environment sensor applications and silicon carbide microelectronics and microelectromechanical system technology for such applications. Namely, this book reviews why silicon carbide is an excellent match for producing harsh environment microsystems, how silicon carbide substrates and films are produced and patterned, review progress towards silicon carbide microelectronics and microelectromechanical sensors, and how electronics and microsensors can be integrated and packaged. Various approaches to communication and power are also discussed. It is hoped that by providing a review of the pieces of silicon carbide microsystem technology currently available and outlining additional innovations needed to produce reliable harsh environment microsystems, new research will address these challenges and the full benefit of silicon carbide microsystems will be realized.

We came into silicon carbide technology through our research at the University of California at Berkeley. We worked together on materials and electromechanical design of harsh environment sensors made from silicon carbide for the DARPA HERMIT project. We would like to thank Prof. Albert P. Pisano and Prof. Roya Maboudian for introducing us to this research.

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