

## CONTENTS

CONTRIBUTORS TO VOLUME 77 . . . . .	vii
PREFACE . . . . .	ix

### **Active-Matrix Thin-Film Transistor Liquid-Crystal Displays**

**SHINJI MOROZUMI**

I. Introduction . . . . .	2
II. Evolution and History of Thin-Film Transistor-Addressed Liquid-Crystal Displays . . . . .	12
III. Key Factors in Thin-Film Transistors for Liquid-Crystal Displays . . . . .	17
IV. Characteristics of Different Types of Thin-Film Transistors and Thin-Film Transistor Liquid-Crystal Displays. . . . .	28
V. Driving Schemes for Thin-Film Transistor Liquid-Crystal Displays . . . . .	47
VI. Color-Image Thin-Film Transistor Liquid-Crystal Displays . .	57
VII. Performance of Liquid-Crystal Displays Based on Alternative Technologies. . . . .	65
VIII. Applications of Thin-Film Transistor-Addressed Liquid-Crystal Displays . . . . .	69
IX. Concluding Remarks . . . . .	74
Acknowledgement. . . . .	77
References . . . . .	77

### **Resonators, Detectors, and Piezoelectrics**

**JEAN-JACQUES GAGNEPAIN**

I. Introduction . . . . .	84
II. Fundamental Equations of Elasticity and Piezoelectricity . . . . .	85
III. Material Constants . . . . .	93
IV. Crystal-Lattice Anharmonicities (A Brief Review) . . . . .	98
V. The Resonator: Simple Linear Model . . . . .	103
VI. Nonlinear Properties . . . . .	112
VII. Sensitivities to External Perturbations and the Design of Detectors . . . . .	125

VIII. Conclusion . . . . .	132
References . . . . .	132

**Scanning Electron Microscopy in the Petroleum  
Exploration Industry**  
J. M. HUGGETT

I. Introduction . . . . .	140
II. Techniques . . . . .	140
III. Sample Preparation . . . . .	150
IV. Reservoir Petrography and Diagenesis . . . . .	156
V. Paleontology . . . . .	185
VI. Qualitative Pore Studies . . . . .	185
VII. Petrophysics and Reservoir Production . . . . .	192
VIII. Future Developments . . . . .	201
References . . . . .	202

**Signal Analysis in Seismic Studies**  
J. F. BOYCE AND L. R. MURRAY

I. Introduction . . . . .	210
II. The Wave Equation . . . . .	214
III. Wave Propagation across Plane Interfaces . . . . .	229
IV. Preprocessing and Prestack Deconvolution . . . . .	244
V. Velocity-Field Determination and Stacking . . . . .	263
VI. Migration . . . . .	277
VII. Amplitude Variation with Offset . . . . .	298
Appendices . . . . .	308
Acknowledgement . . . . .	316
References . . . . .	316
INDEX . . . . .	319