CONTENTS

Abstract 1 Introduction 1 Acknowledgments 1 Data 2 Geology 6 General deposit definition 6 Associated deposits 7 Tectonostratigraphic setting and paleodepths 10 Age range 11 Host and associated rocks 11 Ore minerals 13 Gangue mineralogy 14 Wallrock alteration 17 Structural setting 18 Dimensions of ore in typical deposits 18 Dimensions of alteration or distinctive haloes 18 Effect of weathering 18 Effect of metamorphism 19 Geochemical signatures 19 Isotopic signatures 20 Fluid inclusions 20 Geophysical signatures 21 Ore controls/exploration guides 21 Grades and tonnages of gold-bearing skarns 21 References cited 23 Bibliography of additional gold-bearing skarn references 32

FIGURES

- 1. Graphs showing distributions of tonnage for Au-bearing skarn deposits 2
- 2. Graphs showing distributions of gold grade for Au-bearing skarn deposits 3
- 3. Graphs showing gold skarn classification schemes based on metal ratios 4
- 4. Schematic cross sections of Au-skarn deposits in north-central Nevada 8
- 5. Map showing distribution of Au-skarn districts and geological provinces in the cordillera of western North America 10
- 6. Map showing worldwide distribution of major Au-bearing skarn deposits and fold belts I2
- 7. Graphs showing chemical compositions of igneous rocks associated with major types of mineralized skarn 13
- 8. Photomicrographs showing textural relations of gold and electrum in selected Au-skarn deposits 14
- **9.** Photomicrographs showing complexly zoned garnets from oxidized skarn, Surprise Mine, Nevada 16
- 10. Ternary diagrams showing ranges of garnet compositions for representative samples from five Au-bearing skarn systems in north-central Nevada 16
- 11. Ternary diagrams showing ranges of pyroxene compositions for representative samples from three Au-bearing skarn systems in north-central Nevada 17
- 12. Photomicrograph showing massive garnet partly replaced by pyrrhotite and chalcopyrite 18
- 13. Graphs showing distributions of silver grade for Au-bearing skarns 22
- 14. Graphs showing gold grade compared with copper grade and silver grade 23

TABLES

- 1. Abbreviations used in tables 38
- 2. Gold-bearing skarns in which gold and silver are major commodities exploited 40
- 3. Gold-bearing skarns in which gold and silver are byproduct commodities 46
- 4. Gold-bearing skarn deposits and deposits purported to be gold-bearing skarns for which grade and tonnage data are unavailable 54
- 5. Mineral abundances for gold-bearing skarns 59
- 6. Analytical data for some igneous rocks associated with gold-bearing skarn deposits in north-central Nevada 59
- 7. Representative data for minerals in gold skarns from north-central Nevada 60
- 8. Chemical signatures of nontronite clay layers associated with gold-bearing skarn 61