Chapter	Sections / subsections
1. Introduction	1.1. Fundamentals of Surface Engineering
	1.2. Concept and significance of surface engineering applied to concrete
2. The surface of concrete	2.1. Concrete surfaces: concepts and definitions 2.2. Concrete surface composition 2.2.1. Formed concrete surface 2.2.2. Original finished concrete surfaces 2.2.3. Altered (treated) concrete surfaces 2.2.4. Analogy with ITZ 2.3. Effective composition of the *near-to-surface* layer
3. Characterization of the concrete surface	3.1. Introduction 3.2. Surface profiles 3.3. Mechanical properties (tensile, shear, compressive strength) 3.4. Cracking 3.5. Porosity (permeability, absorption) 3.6. Moisture content 3.7. Surfacecompsition 3.8. Chemical contaminations 3.9. Aesthetic properties 3.10. Other properties
4. Interface phenomena	4.1. Adhesion: principles 4.2. Adhesion: thermodynamic approach 4.3. Contact angle and interfacial free energy 4.4. Evaluation of interfacial energies 4.5. Experimental studies 4.6. Conclusions
5. Compatibility concept	5.1. General considerations 5.2. Dimensional compatibility 5.3. Permeability compatibility 5.4. Chemical compatibility 5.5. Electro-chemical compatibility 5.6. Aesthetical compatibility 5.7. Achievement of compatibility in repair systems 5.8 Conclusions
6. Surface preparation	6.1. Objectives 6.2. Concrete removal techniques 6.3. Surface preparation techniques 6.4. Effects of preparation techniques on surface roughness 6.5. Microcracking and bruising 6.6. Comparison and limitations of the techniques 6.7. Moistening the surface
7. Surface treatment of concrete and adherence	7.1. Types of surface treatments and repair 7.2. Evaluation of adherence 7.2.1. Bond strength 7.2.2. Bond quality 7.3. Influence of concrete surface characteristics 7.3.1. Roughness 7.3.2. Saturation level 7.3.3. Cleanliness 7.3.4. Mechanical integrity 7.3.5. Topology 7.3.6. Contamination 7.3.7. Bonding agents
8. Conclusions and perspectives	General recommendations Future developments in concrete surface engineering