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Nota di contenuto	Intro -- Supervisor's Foreword -- Abstract -- Parts of this paper have been published in the following journal articles -- Acknowledgements -- Contents -- Abbreviations -- Physical Constants at 1 atm Pressure and 293.15 K -- List of Figures -- List of Tables -- 1 Introduction -- 1.1 Research Background -- 1.2 Research Progress -- 1.2.1 Study of Shock-Driven Single-Mode Interface Evolution -- 1.2.2 Study of Shock-Driven Multi-mode Interface Evolution -- 1.2.3 Study of Shock-Driven Three-Dimensional Interface Evolution -- 1.2.4 Study of Rippled-Shock-Driven Unperturbed Interface Evolution -- 1.2.5 Study of Shock-Driven Multi-layer Interface Evolution -- 1.2.6 Study of Shock-Driven Multi-phase Interface Evolution -- 1.3 Research Contents -- References -- 2 Shock-Driven Multi-mode Interface Evolution -- 2.1 Shock-Driven Single-Mode Interface Evolution -- 2.1.1 Experimental Method -- 2.1.2 Results and Discussion -- 2.2 Shock-Driven Quasi-single-mode Interface Evolution -- 2.2.1 Experimental Method -- 2.2.2 Qualitative Analysis -- 2.2.3 Quantitative Analysis -- 2.2.4 Theoretical Analysis -- 2.3 Shock-Driven Multi-mode Interface Evolution -- 2.3.1 Experimental Method -- 2.3.2 Qualitative Analysis -- 2.3.3 Linear and Nonlinear Theories -- 2.3.4 The Mixing Width Growth -- 2.4 Shock-Driven Three-Dimensional Interface Evolution -- 2.4.1 Experimental Method -- 2.4.2 Initial 3DMS Interface Configuration -- 2.4.3

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