بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

INVESTIGATION OF COPPER MATRIX BY POWDER METALLURGY TECHNOLOGY FOR THE MANUFACTURE OF BRAKE PADS

By
Al Shaimaa Ahmed Mohammed Ali Mekky

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Mechanical Design and Production Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

Investigation of Copper Matrix by Powder Metallurgy Technology for Manufacture of Brake Pads.

Key Words:

Brake Pads; Cu-Matrix; Graphite; Powder metallurgy (P/M); compressive strength

Summary:

This investigation pays attention to Cu-composite, which is formed from Cu matrix reinforced with graphite and iron. To demonstrate efficiency and increase the life time of copper matrix for brake pads, the graphite is to be added to Cu matrix with different amounts that are 0, 2, 6, and 12 wt. %. Microstructure by SEM, morphology XRD analysis, relative density, hardness, wear resistance and CTE of the sintered composites were investigated. The results show that the best relative density is 6wt. %Gr (97.31%) with hardness 105.3HV. The compressive strength increases with increasing graphite to 6%, and it decreases with increasing graphite by 12% in Cu matrix. The wear weight loss of S3,S4 and S5 specimens decreases with increasing graphite in Cu matrix. CTE decreases by increasing graphite to 6wt.%.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

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Table of Contents

LIST OF TABLES V

LIST OF FIGURES VI

LIST OF ABBREVIATION IX

ABSTRACT XI

CHAPTER 1 : INTRODUCTION 1

1.1. COMPOSITE MATERIALS 1
1.2. CLASSIFICATION OF COMPOSITE MATERIALS 1
1.2.1. Types of Matrix Materials 2
1.2.1.1. Metal-matrix Materials (MMC) 2
1.2.1.2. Polymer Matrix Materials (PMC) 2
1.2.1.3. Ceramic-Matrix Materials (CMCs) 3
1.2.1.4. Carbon Matrix Materials (CMCs) 3
1.2.2. Reinforcement 4
1.2.2.1. Fiber- Reinforced Composites 5
1.2.2.2. Particles Reinforced Composites 6
1.2.2.3. Structural Reinforced Composites 6
1.3. IMPORTANT OF MMC 8
1.4. FABRICATION PROCESSES OF MMCS 8
1.4.1. Solid State Fabrication 9
1.4.1.1. Diffusion Bonding Technique 9
1.4.1.2. Powder Metallurgy Technique 9
1.4.1.2.1. Production of Metal Powders 10
1.4.1.2.2. Metal Powder Characterization 14
1.4.1.2.3. Mixing of Powders 19
1.4.1.2.4. Compaction of metal powders 21
1.4.1.2.5. Sintering of Metal Powders 24
1.5. TRIBOLOGY; FRICTION AND WEAR 26
1.5.1. Lubrication 27
1.6. BRAKE PAD MATERIALS 31
1.6.1. Charecterization of friction material formulation for brake pads 32
1.6.1.1. The Manufacturing of Frictional Brake Materials 33
1.7. AIM AND OBJECTIVES OF THE PRESENTED STUDY 34

CHAPTER 2 : LITERATURE REVIEW 35

2.1. COPPER PROPERTIES 35
2.1.1. Production of Copper Powder 37
2.1.1.1. Atomization 37
2.1.1.2. The Oxide Reduction and Electrolytic Deposition 38
2.1.1.2.1 Reduction of Copper Oxide 38
2.1.1.2.2 Electrolysis 38
2.2. IRON PROPERTIES 39
2.3. GRAPHITE PROPERTIES 40
2.4. COPPER-BASED MMCS 41
2.4.1. Copper-Based /Iron Materials 42
2.4.2. Cu-based/graphite Self-lubricating Composites with great mechanical 45
2.4.3. Copper-Based / Iron / Graphite Brake Friction Materials 52

CHAPTER 3 : EXPERIMENTAL WORK 71

3.1. INTRODUCTION 71

3.2. MATERIALS 71
3.3. POWDER CHARACTERIZATION 73
3.4. EXPERIMENTAL PROCEDURE 74
3.4.1. Mixing of Powders 75
3.4.2. Cold Compaction of Mixed Powders 76
3.4.3. Sintering Process 77
3.5. COMPOSITE CHARACTERIZATION 78
3.5.1. Density Measurement 78
3.5.2. The Microstructure Characterization 79
3.5.3. Morphology Studies and XRD analysis 80
3.5.4. Vickers Macro-Hardness Test 82
3.5.5. Coefficient of Thermal Expansion (CTE) 83
3.5.6. Compression Strength Testing 83
3.5.7. Wear test 84

CHAPTER 4 : RESULT AND DISCUSSION 86

4.1. STRUCTURAL EVOLUTIONS 86
4.2. SEM OF COPPER, IRON AND GRAPHITE POWDERS 87
4.3. MICROSTRUCTURE INVESTIGATION 88
4.4. DENSITY MEASUREMENT 92
4.5. HARDNESS MEASUREMENT 93
4.6. COMPRESSIVE STRENGTH ESTIMATION 94
4.7. WEAR BEHAVIORS 98
4.7.1. The effects of load on the abrasive wear behavior of all samples 98
4.7.2. The effect of the sliding speed on the abrasive wear behaviour 99
4.8. COEFFICIENTS OF THERMAL EXPANSION 102

CHAPTER 5 : CONCLUSIONS 104

REFERENCES 105

List of Tables

Table 1.1: System of particle shape characterization [18] 15
Table 1.2: Comparative of practical size analysis approaches [20] 16
Table 1.3: Comparison of Solid and Liquid Lubricants in tribological Applications [33] 29
Table 2.1: Physical properties of massive (fully dense) copper [38] [39].....36
Table 2.2: Properties of iron [38] [39].....39
Table 2.3: Properties of graphite [38].....41
Table 2.4: Experimentally measured thermal expansion coefficient of copper-graphite composite in dependence on volume fraction of graphite (c) [47].....45
Table 2.5: Tribotechnical Characteristics of Copper and Composite Materials Based on Copper [48].....46
Table 2.6: Chemical compositions of specimen (wt %) [49] 46
Table 2.7: Proportion and flow rate of exogenous copper-graphite powder [49] 47
Table 2.8: The composition and physical properties of electrical brushes used in this work (vol.%) [50].....48
Table 2.9: Mechanical properties of the samples with 0 wt. %, 1 wt. %, and 2 wt.% graphite [52] 50
Table 2.10: Mechanical properties of the novel Cu-based friction material [36].....56
Table 2.11: Physical and Mechanical properties [60] 58
Table 2.12: Compositions of the samples (by wt %) [61].....59
Table 2.13: Physical and mechanical properties of the samples [61].....59
Table 2.14: Constituents of Cu–Fe–C based materials [62].....61
Table 2.15: Summarized Research 63
Table 3.1: List of the equipment's which are used during the experimental work 72
Table 3.2: Properties of copper, iron and graphite powder [34] 73
Table 3.3: Copper, iron and graphite percents.....75
Table 4.1: Wear weight loss after abrasion wear of S1, S2, S3, S4, and S5 sintered samples for 15min at 5.85 and 8.35, 10.85 m/s sliding speed 98

List of Figures

Figure 1.1: The composite materials families [1].....1
Figure 1.2: Structure of graphite [10].....4
Figure 1.3: Classification scheme for the various types reinforcement in composites [12] 5
Figure 1.4: Types of reinforcements.....6
Figure 1.5: Schematic diagram of (a) Fiber-reinforced layers for a laminar composite and (b) Construction of a honeycomb core sandwich panel [12] 7
Figure 1.6: Flowchart of various routes for processing MMCs 8
Figure 1.7: (1) Mixing of the powders; (2) Compaction, (3) Sintering [1] 10
Figure 1.8: (1) Figure (1.8): Several atomization methods for producing metallic powders: (a), (b) two gas atomization methods and (c) two types of gas atomization methods[1][20] 11
Figure 1.9: Water atomization technique [1].....12
Figure 1.10: Centrifugal atomization by the rotating disk Method [1] 12
Figure 1.11: Morphology of iron pentacarbonyl [1].....13
Figure 1.12: Ball mill [1].....14
Figure 1.13: Hall flow-meter [20] 17
Figure 1.14: Larger angles indicate greater friction between Particles [1] 18
Figure 1.15: Figure (1.15): Several blending and mixing devices: (a) Rotating drum, (b) Rotating double-cone, (c) Screw mixer, and (d) Blade mixer [1] 20
Figure 1.16: Flow pattern in (a) Double cone and (b) V-type mixers [20] 20
Figure 1.17: Mechanisms of powder mixing modes 21
Figure 1.18: Configure of particle distribution during mixing; (a) Uniform mixed (b) Random mixed, (c) Agglomerates, (d) Segregation of particles [19].....21
Figure 1.19: The various steps involved in compaction of powders under an applied force [24-26].....22
Figure 1.20: Processes running in a compact with increasing pressure [19].....23
Figure 1.21: Single and double action pressing [20].....23
Figure 1.22: (a) Loose powder, (b) Initial stage, (c) Intermediate stage, (d) Final stage [28] 25
Figure 1.23: Schematic images of four representatives wear Modes 27
Figure 1.24: Methods of lubrication (a) Hydrodynamic lubrication (b) Boundary lubrication and (c) Mixed lubrication [32] 28
Figure 1.25: Schematic illustration of layered crystal structures of (a) Graphite, (b) Hexagonal boron nitride, (c) Molybdenum disulfide (representing transition metal dichalcogenides), and (d) Boric acid 30
Figure 1.26: a, b, c Brake pads form 31-32
Figure 2.1: Face centered cubic (FCC) [38].....35
Figure 2.2: Natural copper [38].....36
Figure 2.3: Scanning electron micrographs of gas and water-atomized copper powders: (a) nitrogen atomized, (b) water-atomized, apparent density of 3.95 g/cm3, (c) water-atomized, apparent density of 4.5 g/cm3 [40].....37
Figure 2.4: Crystal structure of iron (BCC), (FCC) [42].....39
Figure 2.5: Graphite structure [10].....40
Figure 2.6: Wear rate (a) and COF (b) of specimens tested under different braking energy density conditions [44] 42

Figure 2.7: Tribological properties of the composites vary with applied loads under a constant sliding speed of 70 mm/min [45] 43
Figure 2.8: Tribological properties of the composites vary with sliding speeds under a constant applied load of 60 N [45]....43
Figure 2.9: Effects of friction speed on the friction coefficient [46]....44
Figure 2.10: Variation of friction coefficient of copper-based friction material with exogenous copper–graphite powder under different speeds [49]....47
Figure 2.11: Friction coefficient as a function of the applied load [50]. 48
Figure 2.12: Effect of graphite addition on the relative density of the copper/graphite composite [51]....49
Figure 2.13: Wear weight loss of copper/graphite composite for, (a) different load, and (b) different sliding distance [51] 49
Figure 2.14: Relationship between wear loss and content of graphite [52] 50
Figure 2.15: Friction coefficient curves of the composites with different graphite contents [52] 51
Figure 2.16: (a) variation of wear rate of Cu-based composites with sliding speed (p = 100 N) and (b) variation of wear rate of Cu-based composites with load (v =2.08ms^{-1}) [53] 52
Figure 2.17: View of (a) The disc brake system and schematic drawing of (b) The brake pad [59] 54
Figure 2.18: Optical microscope images of Cu-MMC: (a) Parallel to the friction surface, and (b) Perpendicular to the friction surface [59] 54
Figure 2.19: Results of the average coefficient of friction of Cu-MMC [59] 55
Figure 2.20: Coefficient of friction as a function of (a) The sintering temperatures and (b) Disk operating temperatures [59]....56
Figure 2.21: Micro-Hardness and Thickness Loss [60] 57
Figure 2.22: Microstructure of the Cu55 sample [60] 57
Figure 2.23: COF against Drum Temperature on second fade [60] 58
Figure 2.24: Mean COF versus initial braking speed (IBS) for different samples [61]....59
Figure 2.25: Wear rate versus IBS for different samples [61]....60
Figure 2.26: Densities of Cu–Fe–C specimens [62]....61
Figure 2.27: Typical variations in friction coefficient with sliding time [62]....61
Figure 2.28: Mass losses of Cu–Fe–C and FC30 after sliding for 3000s....62
Figure 3.1: Flow chart of the experimental procedure of Cu- matrix....74
Figure 3.2: Mixing machine 75
Figure 3.3: Uniaxial hydraulic pressing machine....76
Figure 3.4: Compaction device assembly....77
Figure 3.5: Tube furnace under argon used for sintering process 77
Figure 3.6: Heating cycle of the vacuum sintering process under argon atomosphere..78
Figure 3.7: Archimedes test system....79
Figure 3.8: Grinding and Polishing Machine 80
Figure 3.9: Scanning electron microscope Model Quanta FEG250....81
Figure 3.10: X-ray diffractometer model D8ADVANCE....81
Figure 3.11: Vickers macro-hardness tester 82
Figure 3.12: Schematic diagram of the coefficient of thermal expansion system....83
Figure 3.13: Universal testing machine (Model WDW-300)....84
Figure 3.14: Pin-on-disc wear testing machine 85
Figure 4.1: XRD pattern of S1, S2, S3, S4, and S5 after compacting at 700 MPa and sintering at 1000 ° C....86

Figure 4.2: Micrograph of (a) Pure copper powder, (b) Iron powder and (c) Graphite powder 87
Figure 4.3: FE-SEM microstructure of Cu pure after sintering at 1000 ° C.....88
Figure 4.4: a and b FE-SEM microstructure of S2 sample after sintering at 1000 °C.....89
Figure 4.5: FE-SEM microstructure of S3 sample after sintering at 1000 ° C.....90
Figure 4.6: FE-SEM microstructure of S4 sample after sintering at 1000 ° C.....90
Figure 4.7: a and b FE-SEM Microstructure of S5 sample after sintering at 1000 °C.....91
Figure 4.8: The relative density of S1, S2, S3, S4, and S5 sintered samples 93
Figure 4.9: Vickers macro-hardness test of S1, S2, S3, S4, and S5 samples sintered ...94
Figure 4.10: Compressive Stress-strain curve of S1, S2, S3, S4 and S5 sintered samples 95
Figure 4.11: S1, S2, S3, S4, and S5 sintered samples 96
Figure 4.12: S1, S2, S3, S4, and S5 sintered samples after compressive test 97
Figure 4.13: Wear weight loss after abrasion wear of S1, S2, S3, S4, and S5 sintered samples for 15min at 5.85 m/s sliding speed.....100
Figure 4.14: Wear weight loss after abrasion wear of S1, S2, S3, S4, and S5 sintered samples for 15min at 8.35 m/s sliding speed.....101
Figure 4.15: Weight loss after abrasion wear of S1, S2, S3, S4, and S5 sintered samples for 15min at 10.85 m/s sliding speed.....101
Figure 4.16: Coefficients of thermal expansion of S1, S2, S3, S4, and S5 sintered samples 103