Acquisition and Management of Technology-Based Firms In a Trading and Investment Company

By

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Submitted to the MIT Sloan School of Management in Partial Fulfillment of the Requirements for the Degree of

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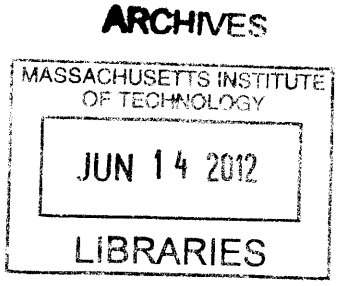

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ABSTRACT

Among several key factors affecting new technology innovation, two important ones that are sometimes disturbed by M&A are long-term plans and the commitment of the acquired firm's management team. M&A led by technology companies are most often motivated by their need for certain technology, and most mergers, the strategies to grow the new company are quite clear. However, when M&A are led by financial investors or non-technology–based firms like private equity or trading and investment companies, the post-merger growth strategy to develop and manage the acquired firm's technology is often not well thought out. This is generally related to their lack of capability of managing of technology which can disturb long-term R&D work. However, some M&A carried out by private equity or trading and investment company, have had positive results.

This study compares three M&A cases of trading and investment companies, private equity, and technology-based companies of technology-based firms. Comparisons are made based on financial figures, the ability to manage technology, and the success of the post-merger integration process.

This study concludes with three suggestions, continuous synergy creation from parent company is essential for sustainable growth, corporate culture and business synergy must be considered carefully during the integration process, and retention of R&D employees and maintaining a technology-oriented corporate culture and environment are very critical for firm's new technology innovation.

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Jin Tanaka

May 10th 2012

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Chapter 1 Introduction

1-1 Problem Definition

A driving force for writers of finance and investment thesis topics is to discover some winning patterns, or unbeatable tips and insights into the process of buying, merging with and/or managing technology-based firms. Through my 16-year career in the chemical industry, I have critically examined the management of technology-based firms. Among several key factors in new technology innovation, two important factors are often disrupted by M&As: long-term plans and management's commitment to the "new" firm. In the case of M&A by technology firms, acquisitions that are normally based on the acquiring firm's specific interests in certain types of technology of the acquired firm, these strategies are quite clear. However, when financial investors or non-technology-owned companies such as private equity or trading and investment companies engage in M&A, they may not have a clear strategy on how to carry out the acquired firm's long-term plans and maintain management's commitment for developing and managing technology. They may often take a short-term financial figure as a measurement of their success; moreover, some acquiring firms reduce R&D

costs to improve their financial figures. These decisions generally relate to their lack of capability in managing technology, which can disturb or stymie long-term R&D efforts that have been set in place by the acquired firm. However, despite this history of mismanagement of technology-based firms, some acquisitions by private equities or trading and investment companies have shown positive results.

This study compares three M&A cases of trading and investment companies, private equity, and technology-based companies of technology-based firms. Comparisons are made based on financial figures, the ability to manage technology, and the success of the post-merger integration process. Then to discover some winning patterns, or unbeatable tips and insights into the process of buying, merging with and/or managing technology-based firms.

1-2 Current Trends of Trading Companies

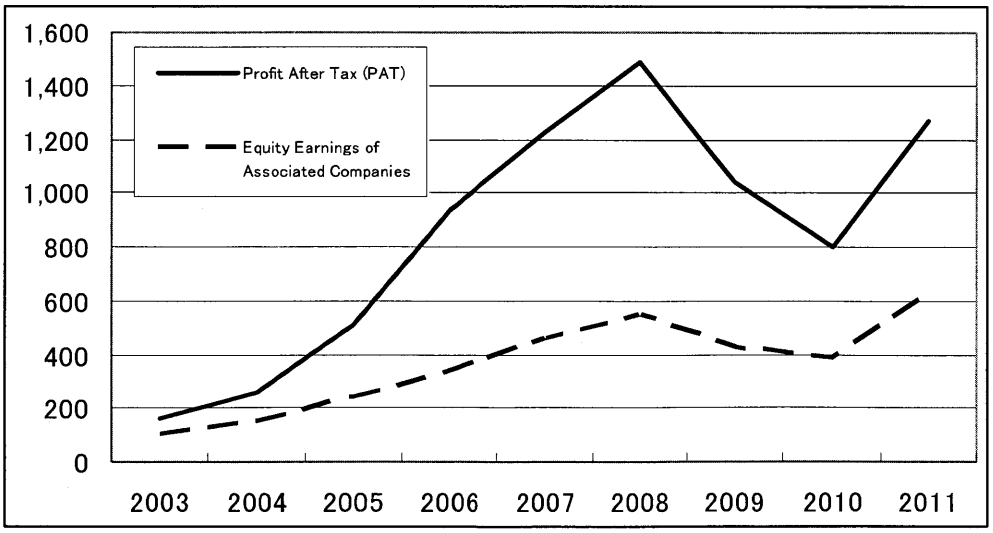
Trading companies in general played important roles from the 1920s to the 1980s when international trades were regarded as a special business model requiring special skills and resources. Among the various functions of trading companies at that time were use of foreign language for sales and

marketing, import and export custom clearances, international logistics for delivering cargos to foreign countries, and the exchange of foreign to local currencies. The typical business model rested on a commission agent who bought goods locally and exported them to foreign countries. In today's global economy, these simple roles in international trade are no longer unique or difficult to carry out; in fact computers can perform most of these tasks. Trading companies have evolved from commission agents to business organizers by adding various distinct functions and values to the trading business.

In the case of Japanese trading companies in the past, some approaches to adding value include (a) providing specialized logistic services like warehousing; (b) providing transport ships and tankers, rail cars, cargo planes; (c) investing in manufacturing plants so as to provide production capabilities, or (d) buying natural resources mining rights, like coal, iron ore, natural gas or crude oil; or (e) invest in electricity power plants to become Independent Power Producers (IPP), to mention a few. Successful profit contributions of these types of investments business activities are shown in historical records of Profit/Loss (P/L). Appendix A shows consolidated profits after tax (PAT) and equity earnings of associated companies of five major

Japanese trading and investment companies: Mitsui & Co. Ltd., Mitsubishi Corporation, Sumitomo Corporation, ITOCHU Corp. and Marubeni Corp. Fig. 1-1 summarizes historical profit trends of Japanese trading companies from fiscal year ending March 2003 to 2011, which shows that profits from equity earnings from associated companies has been increasing, especially from year 2005. Financials of the privately owned subsidiary companies are not publicly available, thus, subsidiary companies for equity share more than 50% are not included in the data of equity earnings. Therefore, it is fair to state that the earnings for investment activities have been increasing dramatically from year 2005.

Figure 1-1: Historical Profit Margins of Five Major Japanese Trading Companies from 2003–2011 (Unit: Billion Japanese Yen)



Data Source: Published annual reports (2003–2011) of each company

Traditional trading companies aiming to change their business model to a high-value-added business model is a challenge that Japanese, and most trading companies, have had to overcome. Firms all around the world have struggled to do this successfully. Li & Fung, Ltd., a Hong Kong-based textile manufacturing company, is a good example of a firm that successfully transformed its business model from simple trading to a high-value-added business model. Li & Fung achieved added value in several stages. The first stage was to become as "regional sourcing agent" by extending its geographic reach by establishing offices in Taiwan, Korea and Singapore, in order to provide regional information to it customers located mostly outside of Asia. In the second stage, Li & Fung took the company's sourcing-agent strategy one step further and became an outsourcing manufacturer with design capabilities. Li & Fung increased its manufacturing business with its own design capabilities based on its market knowledge to create a unique prototype designs to present to customers. Its customers, located mostly outside of Asia, appreciated Li & Fung's productive business idea which enabled Li & Fung to increase their out sourcing manufacturing business and capability. The third strategy was "dispersed manufacturing". With labor costs rising in Hong Kong in the early 1990s, Li & Fung managed to

break the textile manufacturing's value chain and set up production plants in various Asian countries, such as Malaysia, Philippines and China, where labor cost was cheaper, to accrue considerable cost reductions. This became a strong competitive advantage that enabled Li & Fung to become a major textile supplier and manufacturer in Asia. Li & Fung now has large contracts for manufacturing and providing clothing with Wal-Mart the world's largest retailer.[1]

Chapter 2 analyzes an acquisition case by Mitsui & Co in the feed additive industry.

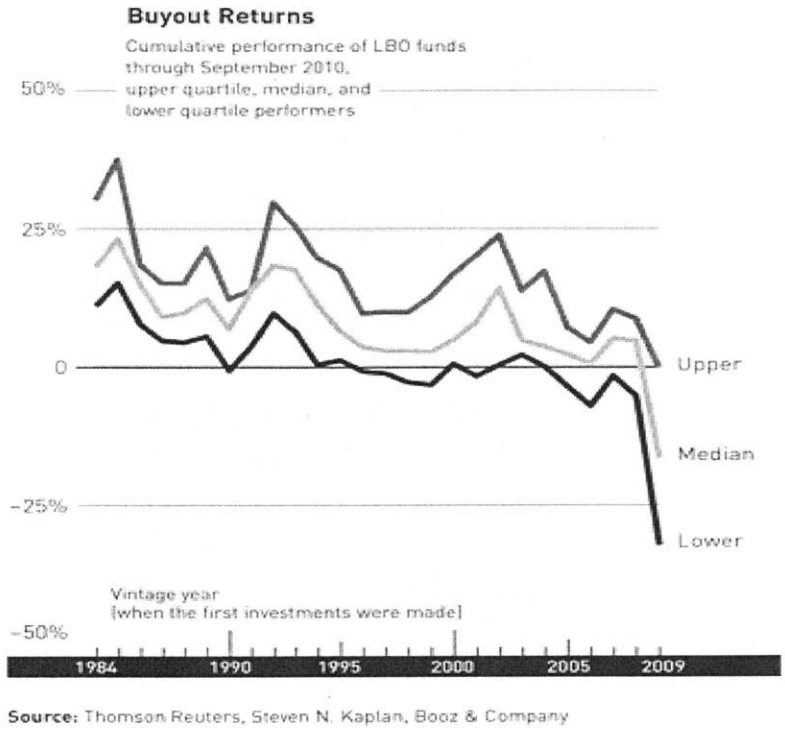
1-3 Current Trends in Private Equities

The private equity business model has changed over the past 30 years, and has done so in three stages. In the 1980s, the first business model used financial engineering, more specifically, companies used debt to buy companies and took them private, with the expectation of reselling them or going public (IPO) later at a leverage-enhanced rate of return. By the 1990s, however, due to increased competition among private equity firms, return on

[1] McFarlan W., Kirby, W.C. and Manty, T.Y. (2006)

LBO dropped sharply. Fig. 1-2 shows a steady downward trend of LBO returns even before the global financial crisis hit in 2008.

Figure 1-2: Historical Movement of LBO Returns (1984–2009)



Source: Thomson Reuters, Steven N. Kaplan, Booz & Company

With the sharp drop of LBO returns and the write-down value of many portfolio companies in recent years, especially after the IT bubble burst in year 2002, private equity firms took steps to implement cost savings across their portfolios of companies. This was the second business model change that private equity firms implemented to increase the value of their portfolio companies. This step was mainly through operational changes, such as

process improvements, manufacturing outsourcing, business restructuring, centralized sourcing and the replacement of employees with technology.[2]

The third major business model change was to pursue portfolio companies' organic growth. TPG Capital, a Texas based private equity firm, provides a good example of this new direction. TPG's structured 60-person operations team includes experts in the areas of pricing and sales force effectiveness. For instance, after TPG bought a division of Motorola's semiconductor business, its operating group co-worked with the acquired company's R&D in hopes of helping its engineers to improve the efficiency of the product development process. By the time the improvement program was finished, the acquired company, ON Semiconductor, had greatly reduced the time it took to bring a new product from conception to market from 500 days to fewer than 250 days.[3]

In 2005 Ernst & Young conducted a study of 100 businesses owned by private equity firms in Europe, and found that the value of these businesses grew at twice the annual rate achieved by public companies in the same country and sectors over the same time period. Ernst & Young concluded

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[2] Favaro, K. and Neely, J. (2011)

[3] Favaro, K. and Neely, J. (2011)

that long-term improvements in a business's profit growth and value does not come from cost cutting or financial engineering but from focused investment, making a few key changes fast and then sharing the benefits of incentives with investors and management. Ernst & Young also found that across almost all deals and ownership strategies, private equity firms were heavily involved in advising and assisting management following acquisitions. They made rapid decisions alongside management, challenged progress, and provided specialist expertise, including industry, regulatory, financial, and M&A. The intensity of the engagement between private equity investors and management was often greater than under previous owners that were non private equity.[4] A similar conclusion was found in a 2005 McKinsey study of 60 businesses by 11 private equity firms in which the private equity firms devised value-creating plans and executed them very effectively.[5] Among those private equities which have pursued portfolio companies' organic growth, Apollo Management shows very interesting approaches of conducting series of buyouts in the same industry.

Chapter 3 analyzes an acquisition case by Apollo Management in

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[4] Ernst & Young, (2006)

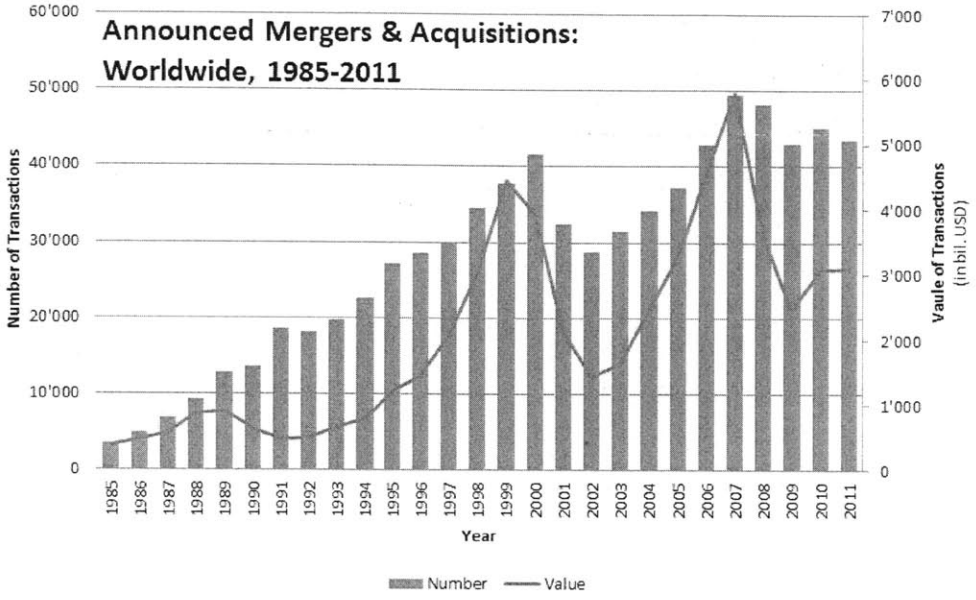
[5] Pozen, R.C. (2007)

chemicals industry.

1-4 Current Trends of Strategic Buyouts

When technology-based firms acquire technology-based firms, this transaction is often called a "strategic buyout," which is usually based on a clear match of technology needed for the buyer's business strategy. Thus, such acquisitions are carried out with long-term strategic holding plans, and aim to create synergies and add new capabilities and values to increase corporate strength. M&A is a powerful tool to add corporate value. Fig. 1-3 shows the historical movement of M&As worldwide from 1985 to 2011. The total value of announced M&As decreased by about 50% in the wake of the 2008 Global Financial Crisis, but the number of transactions has remained high over the past four years.

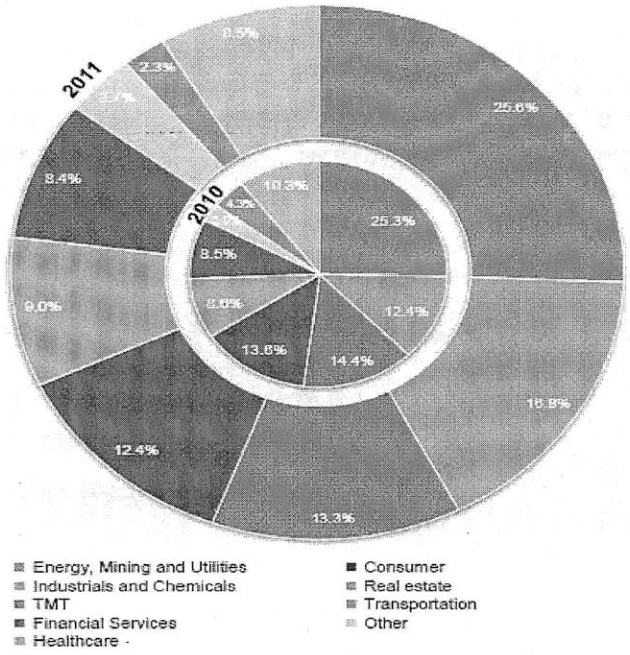
Fig. 1-3: Announced Mergers & Acquisitions Worldwide: 1985–2011



Data Source: Institute of Mergers, Acquisitions and Alliances (2011)

Sector variation by industry in 2010 and 2011 are shown in Fig. 1-4. The biggest industry in deal amount is Energy & Mining (25.6%), followed by Industrials & Chemicals (16.8%), Telecommunication (13.3%), and Financial Service (12.4%). Technology-based M&A total 39% of all the industries, with a transaction value of an estimated $2 trillion in 2011.

Fig. 1-4: Mergers & Acquisitions Sector Variation: 2010–2011



Source: Mergermarket M&A Round-up for Year Ending 2011

Results from M&As are not always successful; often disappointing results are reported. The biggest failure of a technology-based strategic buyout is the $165 billion deal of AOL–Time Warner in 2000. Another big failure was the $13.4 billion deal of the French telecommunications company Alcatel's acquisition of Lucent technologies in 2006. Among those successful companies, company like, Cisco Systems, General Electric, and Johnson & Johnson had tremendous success in their merger and acquisitions to build new resources and capabilities.

Chapter 4 analyzes an acquisition case by Cisco in the IT industry.

Chapter 2 Trading and Investment Company: Mitsui & Co. Ltd.

2-1 History and Business Models of Mitsui & Co. Ltd.

Mitsui & Co., Ltd., one of the largest trading and investment companies in Japan today, is a good example of how a company can successfully transform its business model over a century. Begun as a trading company in Japan in the 1880s, Mitsui & Co. today is a multinational conglomerate offering a variety of business services and products from infrastructure projects construction to chemicals, IT, and financial products. Mitsui & Co. website (http://www.mitsui.com/)

Mitsui was established in 1876 soon after Japan opened its ports to foreign vessels. Its mission:" to trade with all countries in the world by exporting surplus goods from Japan to other countries and importing goods to meet domestic demand. Originally, Mitsui traded mainly in rice throughout Japan and was the first Japanese company to export Japanese rice to Europe.

It helped modernize Japanese industry by building a cotton yarn spinning plant and importing modern cotton spinning machines from England and raw cotton from China, India and the United States. Until the 1910s, Mitsui focused primarily on the expansion of its offshore trade. After World War I, however, its activities expanded the role of business organizer and incubator — it assisted companies develop new products and business plans and to foster regional industries (Mitsui webpage).

In the 1930s, Mitsui shifted to heavy industries including machinery, chemicals and mining. This strategic shift increased Mitsui's holdings to more than 250 companies. After World War II, however, the Supreme Commander of the Allied Powers ordered Mitsui's dissolution, which resulted in over 200 new companies, one of which was Daiichi Bussan, a general trading company that imported clothing, food and housing supplies, and mineral phosphate and exported shiitake mushrooms. In the 1940s and 50s, Daiichi Bussan expanded its trading to include timber, canned foods, fish and seaweed, fats and oils, pharmaceuticals, glass and other products.

By 1950, when Japan's battered post-WWII economy revived, Daiichi Bussan expanded to include traded in natural resources, technology and in

raw materials; in 1959, Daiichi Bussan brought together many former Mitsui companies to form the new Mitsui & Co., Ltd.

In 1960-1980, during the high economic growth, global business was rapidly developing and Mitsui & Co had significant contribution to Japan's postwar economic recovery by providing stable procurement of energy and raw materials. Around this period, the function of the Mitsui & Co in some industry has evolved from commission agent to rather organizer by adding various values to the trading business. In some of the methods of adding higher value were, providing specialized logistic services like warehouse, ocean vessels, tank, or rail cars, or invested on manufacturing plant to have its own production, or invested on mining right of natural resources, like coal, iron ore or crude oil.[11] Among many subsidiary and associated companies in Mitsui & Co., Novus International, a Missouri based feed additive manufacture, is the most successful manufacturing company in terms size of operation and earnings. This chapter analyzes Mitsui & Co.'s feed additive business.

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[11] Mitsui & Co. LTD. Corporate website http://www.mitsui.com/

[13] Mitsui & Co. LTD Chemicals Segment Case Study, (2011)

2-2 Mitsui & Co. Ltd. Feed Additive Business

Mitsui & Co.'s feed additive business is a good example of a firm's evolution from a simple trading business to highly value-added business via shrewd investments in technology-based firms. Mitsui & Co.'s feed additive business began in 1960 by exporting amino acids called Lysine and Methionine, the main amino acids in mixed feed, which is fed to cattle and other livestock. The feed additive market began growing exponentially in the 1950s when the livestock industry was modernized by new technologies and chemical fertilizers and pesticides. Mitsui & Co. had been exporting Lysin and Methionine from Japanese manufactures and distributing it globally. Mitsui & Co. saw a big potential in the feed additive markets in line with demand growth in the livestock industry and the rapid growth of the world's population. In 1970s, Mitsui & Co. saw a limitation of its business model by the simple commission-based trading since quantity allocation decisions were mostly made by manufactures, not by export agent, Mitsui & Co.[13]

2-3 Bioproducts Inc.

In 1981, Mitsui & Co. initiated a business model change by acquiring a feed additive business from US chemical company, Diamond Shamrock. The

business included three poultry feed-additive plants that manufactured chorine chloride, and a distributorship of Methionine from a French chemical company, Rhone Poulenc. Although, the company size was rather small with 100 employees, however, this acquisition enabled Mitsui & Co. to establish a presence in the North American feed additive market.

Since all of Diamond Shamrock's employees were American, Mitsui & Co. hired an American CEO Mike Hickey, who was at that time a board member of Monsanto, a U.S. based multinational agricultural biotechnology corporation. The new company, Nutrius, later became Bioproducts Inc., and in 1983, acquired Feed Frontier, an Iowa-based feed additive manufacturer with a focus on swine feed. In 1984, Nutrius acquired Springfield Supplement, a California-based feed additive manufacturer specializing in cattle feed, and in 1986, Nutrius acquired the former Bioproducts Inc., an Ohio-based feed additive manufacture specialized in aqua, then Nutrius changed corporate name to Bioproducts Inc. which became a total feed additive manufacture for poultry, swine, cattle and aqua. Bioproducts continued its acquisitions to develop their feed additive business portfolio and its revenues doubled in 10 years from the first acquisition.[14]

[14] Mitsui & Co. LTD Chemicals Segment Case Study, (2011)

2-4 Novus International Inc.

In 1990, Monsanto focused its business portfolio on seed, herbicides and biotechnology. In 1991, Mitsui & Co. acquired Monsanto's feed additive business which had a partnership with Nippon Soda Co., Ltd., with an ownership structure of 65% Mitsui & Co. and 35% Nippon Soda. Mitsui & Co. invited Nippon Soda to join its acquisition of Nippon Soda and manage the manufacturing and operations units. Through this acquisition, Mitsui & Co. developed its feed additive business from a simple export business to global players in feed additive market.

2-5 Financial Performance

Financial figures of Novus International are not publicly available. From annual reports of Mitsui & Co. and Nippon Soda, strong earnings of Novus from 2005 to 2011, have been reported.

2-6 Mitsui & Co. Ltd's Value Creation in the Feed Additive Business

Some of the synergy created by Mitsui & Co. for Novus was based on utilization of Mitsui & Co.'s market knowledge on feed additives. This was an accumulated knowledge from the over 30 years of global trading. Also, its

experience built through a series of acquisitions by Bioproducts in the North American feed additive market also added key knowledge and synergy between Mitsui & Co. and Novus. Novus was one of the largest feed additive players in the global market, however, it was rather limited from methionine producers' perspective. Mitsui & Co. provided global market information from other products perspectives, which enabled Novus to create a complete value chain analysis.

2-7 Post-Merger Integration Strategy

After Mitsui & Co. bought controlling shares of Novus in 1991, it managed to retain most of the employees from Monsanto, and its first and basic strategy for post-merger integration was to encourage Monsanto employees' continued commitment to its new non-American owners and new company, Novus.

At the first board meeting on the day of the formal acquisition, Mitsui & Co. announced its vision: Novus was to be the leading global producer of Methionine, In addition, Mitsui & Co. demonstrated its strong commitment to Novus by stating its goal was to grow it to $1 billion company.

Mitsui & Co., as a majority shareholder of Novus, appointed experienced Americans in the top managements. In a management agreement, Mitsui & Co. clarified what the management team could and could not do, and gave them the autonomy to run Novus. Basically, Mitsui & Co. controlled Novus through input at board meetings, not in day-to-day consultations.[15]

2-8 Management of Technology

Monsanto was one of the world's leading chemical companies and its employees, from top management to R&D to operations, were highly educated chemical engineers, microbiologists, geneticists, and IT folks with a strong interest in technology and competitive strategy. Novus was poised to increase corporate value via innovative technology creation. Mitsui & Co. had tried hard not to change its corporate culture. Its decision to invest in a new R&D facility after its acquisition demonstrated to employees its commitment to support technology development. Novus' corporate website (http://www.novusint.com) illustrates this commitment:

In our first year, we put into place the corporate Vision of "helping to feed

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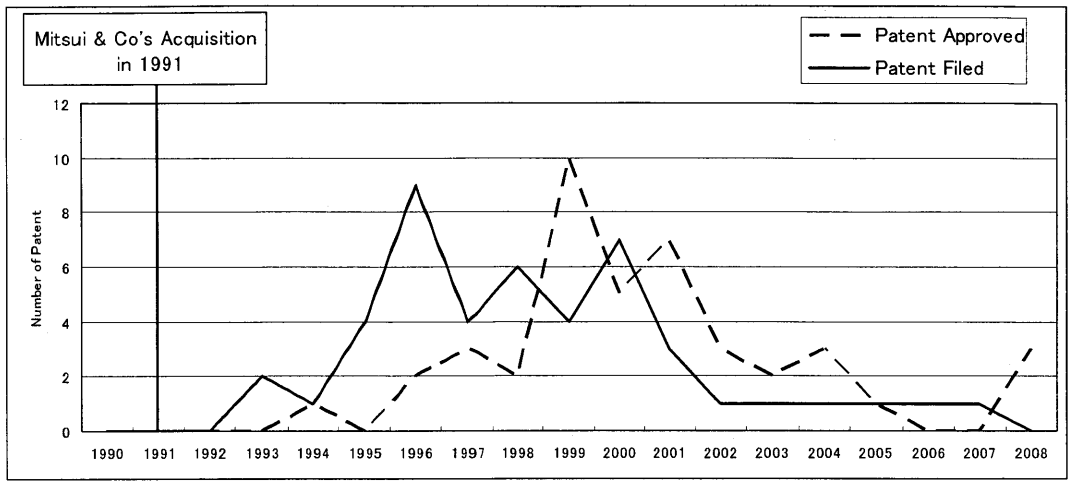
[15] Mitsui & Co. LTD Chemicals Segment Case Study, (2011)

the world affordable, wholesome food." At the time, this Vision statement was considered a bold goal and some questioned how Novus could realistically make a contribution. We were a small, business-to-business company with two products for the poultry industry, but we understood that Novus's core knowledge of health and nutrition related to poultry could be beneficial to other species. Working from a strong base of scientific understanding, we have brought to market more than 100 new products over the past decade. Today the Novus product portfolio provides a holistic approach to Health through nutrition for poultry, cattle, pigs, pets, farm-raised fish, horses and people.[16]

A list of patents approved and filed is shown in Appendix B. The historical number of patents of the two companies is shown in Figure 2-1 below._The data is based on patents approved by end of March 2012 (the patents filed but pending are excluded). After Mitsui's 1991 acquisition of Novus the number of patents filed and approved peaked in late 1990s and then declined. This may be due to more effort on R&D work on registration of products rather than patents of new molecules or new process.

[16] Novus International Inc. Corporate website http://www.novusint.com/

Fig. 2-1: Number of Patents of Novus International (1990-2008)



Data Source: US Patent Office Patent Full-Text and Image Database

Chapter 3 Private Equity, Tech Buyout : Apollo Global Management

3-1 History and Business Models of Apollo Global Management

Apollo Global Management, a New York-based Private Equity firm founded in 1990 had more than $65 billion in assets under management as of September 20, 2011, in private equity, credit-oriented capital markets and real estate funds. Apollo's first fund, raised in 1990, had approximately $400 million, and since then, Apollo raised seven private equity funds including the most recent Fund VII which raised approximately $15 billion in 2008. Today, Apollo is one of the largest investment management firms in the World.

Apollo has been a very active private equity investor, especially during the financial boom of 2005-2007. Appendix C lists Apollo's private equity investments held in the Apollo Investment Funds V, VI and VII. Its largest investments include the $27.4 billion acquisition of the gaming company, Harrah's Entertainment, $8.5 billion acquisition of the real estate franchisor, Realogy, and $3.8 billion acquisition of the General Electrics' silicon & quartz business, Momentive Performance Materials.[17]

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[17] Apollo Global Management Corporate website http://www.agm.com/

Apollo has followed a very interesting approach in a series of buyouts across an industry, including the luxury cruise industry. In February, 2007, Apollo acquired Oceania Cruise, a Florida-based company, and in January 2008, Apollo completed a $1 billion investment in Norwegian Cruise Line, a Florida-based company, then shortly afterward, in February, 2008, Apollo completed another $1 billion acquisition of Regent Seven Seas Cruises, a Florida-based company.

Another example of Apollo's industry cluster purchases is a series of chemical companies it acquired in 2005 through the merger of Borden Chemical Inc. ,a Georgia-based company, Resolution Performance Products LLC, a Texas-based company, Resolution Specialty Materials LLC, a Texas-based company, Bakelite AG, a Germany-based company, and General Electric's Advanced Materials, a New York-based company,. Apollo formed two chemical companies, Momentive Specialty Chemicals and Momentive Performance Materials both of which are under Momentive Holding Company, which is 100% owned by Apollo Global Management.

3-2 Momentive Performance Materials Group

Momentive Specialty Chemicals Inc., formerly Hexion Specialty

Chemicals, Inc., a New Jersey-based corporation with predecessors dating from 1899, is the world's largest producer of thermosetting resins, or thermosets, and a leading producer of adhesive and structural resins and coatings. Momentive Specialty Chemicals Inc. was formed on May 31, 2005, when Apollo combined three of its companies, Resolution Performance Products LLC, Resolution Specialty Materials, Inc., and Borden Chemical Inc., including Germany-based company, Bakelite Aktiengesellschaft. This merger is known as the Hexion Formation.

Although the three companies belong to the chemical industry their background and specific business segments differed. Resolution Performance, a worldwide manufacturer and developer of epoxy resins and a leading global manufacturer of versatic acids and derivatives, was acquired by Apollo in November, 2000, from Shell Chemical L.P. Resolution Specialty, a producer of coating resins, inks, composite polymers, textile chemicals and acrylic monomers, was acquired by Apollo from Eastman Chemical Company in August, 2004. Borden Chemical, a worldwide manufacturer of forest products and industrial resins, formaldehyde, oil field products and other specialty chemicals, was acquired by Apollo in August, 2004. In April, 2005, prior to the Hexion Formation, Borden Chemical acquired Bakelite, a

leading European producer of phenolic and epoxy composite resins and molding compounds. Apollo explained this merger as an expansion of its specialty chemicals business through strategic acquisitions.

The Hexion Formation enhanced its business focus in four reportable segments: epoxy and phenolic resins, formaldehyde and forest products resins, coatings and inks, and performance products. Hexion has continuously expanded its specialty chemicals business through acquisitions but with more focus on its business segment.

In February, 2007, Hexion acquired the adhesives and resins business of Orica Ltd., a New Zealand based company, which manufactures formaldehyde and formaldehyde-based binding resins used primarily in the forest products industry. This business generated sales of approximately $85 million in 2006, from its three manufacturing facilities in Australia and New Zealand. In November, 2007, Hexion acquired the German forest products resins and formaldehyde business of Arkema GmbH. This business manufactures formaldehyde and formaldehyde-based resins and generated revenues of approximately $127 million in 2006.

Hexion Specialty Chemicals Inc. announced in July 2007 its acquisition of Huntsman Corp., a major specialty chemicals company, in a $6.5 billion

leveraged buyout. Later, Hexion Specialty Chemicals announced in June 2008 its refusal to close the deal. The transaction was officially terminated in December 2008 after a settlement between Hexion Specialty Chemicals Inc. and Huntsman Corp. for $1 billion payment as a penalty for termination of the deal. The deal was never completed, however, this attempt of acquisition illustrates Apollo's aggressive involvement in the Chemical industry.[18]

Unlike Momentive Specialty Chemicals, Momentive Performance Materials Inc. was created in December, 2006 through the $3.8 billion acquisition of General Electric Advanced Materials, a New York-based corporation, became one of the world's largest producers of quartz, silicones and silicone derivative products, with multiple production sites located globally. The use of silicones is widespread, ranging from personal care products to construction insulation to automotive sealants.

3-3 Financial Performance

Both Momentive Performance Materials Inc and Momentive Specialty Chemicals Inc., did not have strong financial records. In 2008, when the Global Financial Crisis hit, almost all chemical prices decreased

[18] Momentive Specialty Chemicals, 10K reports.

proportionally to the crude oil price, which was down from $140/bll to $40/bbl. Therefore, the sharp decrease of these two firms' revenue can be explained by this inevitable market shock.

Momentive Performance Materials Inc. had 5 years' consecutive net income loss from 2006 to 2010. As shown in Table 3-1, Apollo's acquisition of General Electric Advanced Materials was in the 2006, and its net income has been negative for all four years post acquisition. Its free cash flow has fluctuated, however, increases in its operating cash flow is a positive sign of the company's performance.

Table 3-1: Financial Records of Momentive Performance Materials

(Unit: $ Million)

	2005	2006	2007	2008	2009	2010
Revenue	2,342	2,414	2,538	2,639	2,084	2,588
Gross Profit	912	831	885	802	663	943
Net Income	74	-37	-254	-997	-42	-64
Free Cash Flow:	309	-62	262	237	-48	146
Operating Activities	*420*	*-101*	*302*	*77*	*27*	*262*
Investing Activities	*-48*	*-3,800*	*-63*	*-10*	*-4*	*-3*
Financing Activities	*-63*	*3,839*	*23*	*170*	*-71*	*-113*
Total Assets	3,436	4,418	4,447	3,584	3,307	3,292

Data Source: Momentive Performance Materials, 10K reports (2005-2010)

Momentive Specialty Chemicals Inc. has 5 years' consecutive net income

loss including net income loss of $105 million in 2004 (see Table 3-2). The company also recorded 3 years of consecutive losses, from 2000 to 2002, $40 million, $187 million, and $37 million consecutively. Apollo's acquisition of Resolution Performance from Shell Chemical was in 2000, and its net income has been negative for 9 fiscal years after the acquisition except for 2003. Net income was reported positive in the recent 2 years, which indicates a dramatic recovery in profitability.

Table 3-2: Financial Records of Momentive Specialty Chemicals

(Unit: $ Million)

	2005	2006	2007	2008	2009	2010
Revenue	4,442	4,874	5,420	5,690	3,751	4,818
Gross Profit	661	690	757	599	491	744
Net Income	−117	−142	−65	−1,190	114	214
Free Cash Flow:	36	−128	127	−60	1	43
Operating Activities	*171*	*21*	*174*	*−632*	*355*	*45*
Investing Activities	*−354*	*−277*	*−335*	*−134*	*−132*	*−99*
Financing Activities	*219*	*128*	*288*	*706*	*−222*	*97*
Total Assets	3,209	3,508	4,006	3,180	2,973	3,137

Data Source: Momentive Specialty Chemicals, 10K reports (2005-2010).

3-4 Apollo's Value Creation

After the Formation of Momentive Performance Material Group, Apollo implemented strategic cost and working capital reduction initiatives to drive

up its free cash flow. One approach was a shared services agreement between two companies to achieve cost-cutting benefit. The other approach was by utilizing Apollo's financial expertise to support the two companies' financial activities.

The two companies entered into a five-year shared services agreement in October 2010, to generate cost savings and other synergies through a shared service model in a number of areas, such as executive and senior management, administrative support, human resources, information technology support, logistics optimization, accounting, finance, legal and procurement services. Each company had approximately $50 million of in-process cost savings and synergies in connection with the shared services agreement. The two companies also completed a number of projects aimed at increasing profit margins through cost reductions and efficiency improvements.

Apollo supports these two group companies by using its financial skills, mainly by employing two methods: one is by adding liquidity and the other by providing factoring services. Affiliates of Apollo in financial service have agreed to make a $100 to $200 million investment in the two group companies via a term loan. As for factoring service, the two companies have

entered into accounts receivable purchase and sale agreements to sell trade accounts receivable to the affiliates of Apollo. These support cash management of the two companies.[19][20]

3-5 Management of Technology

Apollo's management of technology for the two companies is slightly different. Both companies state their commitment to research and development activities for technical improvement of products and processes that are expected to contribute to future earnings. However, differences are in its R&D costs and its patent filings.

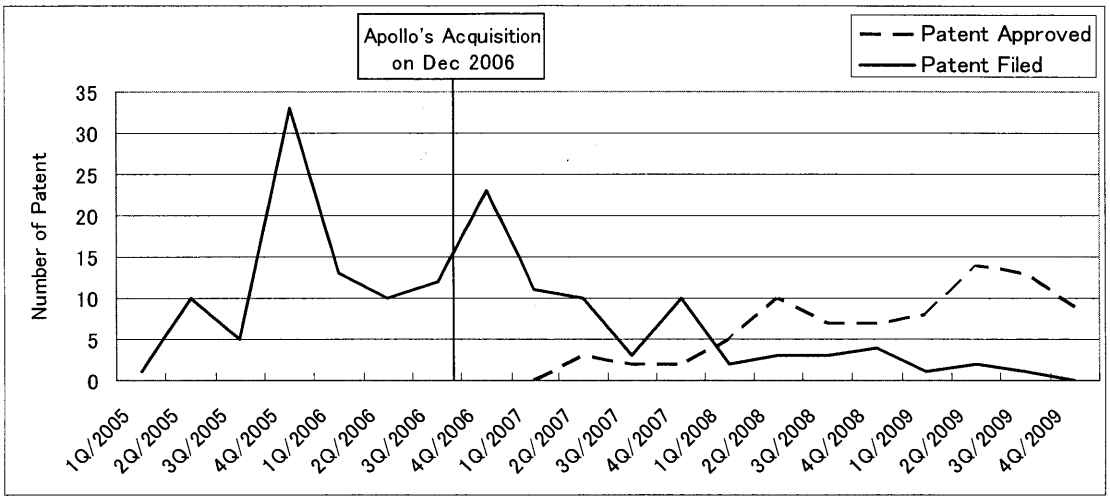
As for R&D cost comparison, Momentive Performance Materials R&D costs for December 31, 2010, 2009 and 2008, were $73.0 million, $62.8 million and $75.7 million, respectively. R&D costs were approximately 3% of the revenues in each year. Momentive Specialty Chemicals R&D costs for December 31, 2010, 2009 and 2008, were $58 million, $57 and $68 million, respectively, slightly above 1% of revenues each year.[21,22]

Appendices D and E list patents approved and filed. Historical movement

[19] Momentive Specialty Chemicals, 10K reports.
[20] Momentive Performance Materials, 10K reports.
[21] Momentive Specialty Chemicals, 10K reports.
[22] Momentive Performance Materials, 10K reports.

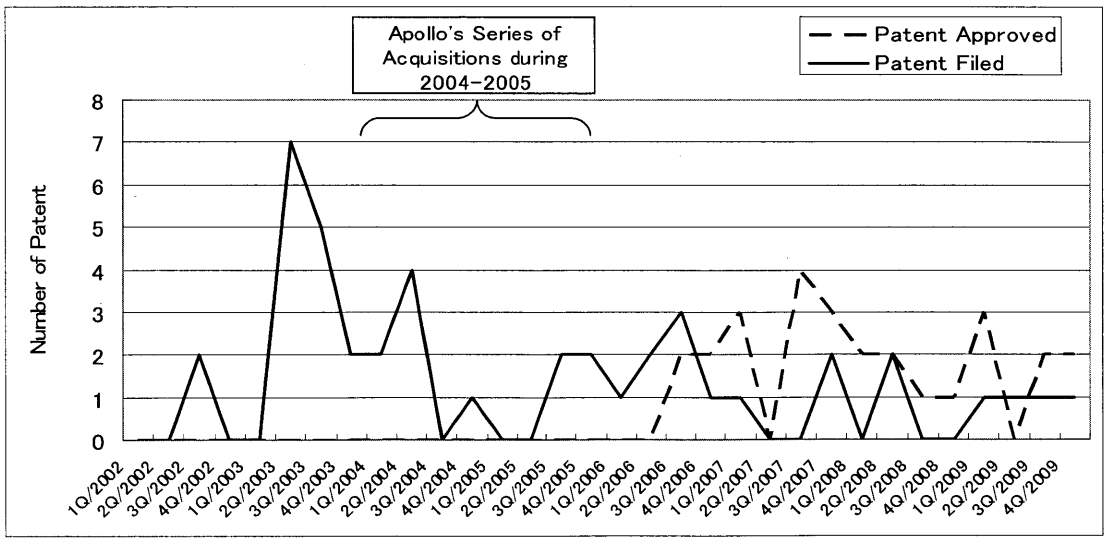
of the number of patents of the two companies appears in Fig. 3-1. These data are based on patents approved by end of March 2012 (the patents filed but pending are not included for both firms). However, trends can be observed, especially during Apollo's acquisition in December 2006.

Fig. 3-1: Number of Patents of Momentive Performance Materials



Data Source: US Patent Office Patent Full-Text and Image Database

Fig. 3-2: Number of Patents of Momentive Specialty Chemicals



Data Source: US Patent Office Patent Full-Text and Image Database

Figures 3-1 and 3-2 illustrate two facts: the sharp decrease in patents after or during Apollo's acquisition, and the number of patents by Momentive Specialty Chemicals was far lower than that of Momentive Performance Materials. Reasons for this difference can be estimated based on the acquisition history of each company. Momentive Performance Materials was a solid unit of General Electrics, on the other hand, Momentive Specialty Chemicals resulted from a merger of five or more companies. Although, the financial figures of Momentive Specialty Chemicals show a strong recovery in 2009 and 2010, this technology management data shows uncertainty in future technology development.

3-6 Management Consulting Agreements

In a typical private equity approach, after acquisition of the two group companies, Apollo secured administrative service, management and consulting agreements with the two companies. Services provided by Apollo and its affiliates included structuring and advisory services. The annual fee under the agreement was $3-4 million. However, it is remarkable that in 2009, due to the global economic downturn, Apollo suspended its annual fees but reinstated the fees in 2010. This shows Apollo's support to the company

by giving up their rights of receiving annual advisory service fee. The management consulting agreement provides indemnification to Apollo and its affiliates and their directors, officers and representatives for potential losses arising from these services. [23,24]

3-7 Leadership by Craig Morrison, CEO

The two companies of Mementive Performance Materials Group, are led by the same CEO, Craig Morrison, who joined Hexion Specialty Chemicals as CEO in March, 2002. He became chairman of the Board of Directors in June, 2005. As CEO of Momentive Specialty Chemicals, Mr. Morrison has played a key role in most of the acquisitions of Momentive Performance Group's companies. The two companies state in the risk disclosure in their 10K reports that close attention of the senior management team is essential to maintain management direction and coherence to avoid disruption.

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[23] Momentive Specialty Chemicals, 10K reports.

[24] Momentive Performance Materials, 10K reports.

Chapter 4 Strategic Tech Buyout: Cisco Systems

4-1 History and Business Models of Cisco Systems

Cisco, headquartered in San Jose, California, was founded in 1984, by a husband and wife team, Ben Bosack and Sandy Lerner, who both studied and worked at Stanford University. Cisco's main product at the time was the first multiprotocol router software originally written several years before by William Yeager from Stanford. After a few years of success and failure, in 1987, when sales started growing quickly, Sequoia Capital, a venture capital firm, agreed to invest $2.5 million in first round of financing in Cisco, and in 1990, Cisco went public. Sequoia Capital took over management of Cisco and the two founders left company in 1990.

Today, Cisco designs, produces, and sells networking equipment and has 60,000+ employees and an annual revenue of US$ 11.5 billion (2012). It's a publically traded company on the Dow Jones, the S&P 500 , the Russell 1000 , and NASDAQ 100 indices.

Cisco is well known for its aggressive strategic buyouts. Cisco's first acquisition was announced in September 1993, a $89 million acquisition of Crescendo Communications, a Sunnyvale, California company, with $10

million in annual revenue and just 60 employees. This deal was initially regarded as possible over pricing deal by Cisco, however, after acquisition, Crescendo's annual revenue dramatically increased to $500 million in 18 months and to $2.8 billion in five years. This massive success led Cisco to focus its acquisition strategy on small companies.

Cisco's first transaction, its Crescendo acquisition, was mediated by its existing relationship with Crescendo. Donald Valentine of Sequoia Capital who was Cisco's first investor and Chairman of the Board was the lead investor in Crescendo. Moreover, one of Cisco's largest customers, Boeing Corporation, was considering installing Crescendo switches. So this first acquisition was not fully 'at arm's length'; Cicso had multiple channels of information on the products and the management team.[25]

Since then, Cisco has acquired more than 100 companies. All of those have clear targets on business strategy fit. From 2007 to 2011, it made 34 acquisitions, approximately one acquisition in every two months. Table 4-1 lists Cisco's acquisitions and its target market opportunities.[26]

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[25] Capron, L. and Brueller, N. (2010)

[26] Cisco Systems Inc Corporate website http://www.cisco.com/

Table 4-1: Cisco's Acquisitions: 2007–2011

Company	Acquired Date	Market Opportunity
BNI Video	21-Oct-11	Video
Versly	29-Aug-11	Collaboration
AXIOSS Saoftware and Talent	21-Aug-11	Network Management
newScale Inc.	29-Mar-11	Cloud
Inlet Technologies	4-Feb-11	Video
Pari Networks, Inc.	26-Jan-11	Network Management
LineSider Technologies, Inc.	1-Dec-10	Network Management
Arch Rock Corporation	2-Sep-10	Smart Grid
ExtendedMedia	26-Aug-10	Video
CoreOptices Inc.	20-May-10	Optical
MOTO Development Group, Inc.	18-May-10	Consumer
Set-Top Box Business of DVN	2-Nov-09	Cable
ScanSafe, Inc	27-Oct-09	Security
Starent Networks, Corp.	13-Oct-09	Mobility
Tandberg	1-Oct-09	Collaboration
Tidal Software, Inc	9-Apr-09	Data Center
Pure Digital Technologies Inc.	19-Mar-09	Consumer
Richards-Zeta Building Intelligence, Inc.	27-Jan-09	Physical Security
Jabber, Inc.	19-Sep-08	Web Services
PostPath, Inc.	27-Aug-08	Web Services
Pure Networks, Inc.	23-Jul-08	Software
DiviTech A/S	10-Jun-08	Cable
Nuova Systems, Inc.	8-Apr-08	Data Center
Securerent, Inc.	1-Nov-07	Voice, Security, Web Service, Software
Navini Networks, Inc.	23-Oct-07	Broadband Access & Apps
Latigent, LLC	27-Sep-07	Voice
Cognio, Inc.	18-Sep-07	Wireless
BroadWare Technologies, Inc.	21-May-07	Physical Security
SpansLogic, Inc.	28-Mar-07	Silicon
WebEx Communications, Inc.	15-Mar-07	Unified Communications
NeoPath Networks	13-Mar-07	Storage
Ractivity, Inc.	21-Feb-07	Networking Services
Five Across, Inc.	8-Feb-07	Consumer
IronPort Systems, Inc.	4-Jan-07	Security

Data Source: Cisco's corporate web site (http://www.cisco.com/)

4-2 Financial Performance

Cisco's financial performance has been positive over the past 6 years with steady increases in revenues and net income. Cash flows have been positive

except for 2010 because of large investing activities. Total assets have grown rapidly, mostly because of consolidation via company acquisitions. This turned Cisco's ROA (Return on Assets) downwards, 16.9%, 12.9%, 13.7%, 13.7%, 9.0% and 9.6% from Jul/2005 to Jul/2010.

Table 4-2: Financial Records of Cisco Systems

(Unit: $ Million)

	2005	2006	2007	2008	2009	2010
Revenue	24,801	28,484	34,922	39,540	36,117	40,040
Gross Profit	16,671	18,747	22,259	25,346	23,094	25,643
Net Income	5,741	5,580	7,333	8,052	6,134	7,767
Free Cash Flow:	1,020	1,655	431	1,463	527	-1,137
Operating Activities	*7,568*	*7,899*	*10,104*	*12,089*	*9,897*	*10,173*
Investing Activities	*2,614*	*-6,544*	*-8,342*	*-4,193*	*-9,959*	*-11,931*
Financing Activities	*-9,162*	*300*	*-1,331*	*-6,433*	*589*	*621*
Total Assets	33,883	43,315	53,340	58,734	68,128	81,130

Data Source: Cisco Systems, 10K reports (2005-2010)

4-3 Management of Technology

Cisco has a very clear strategy on acquisitions, investments, and alliances. Cisco states its mission and business environment as technological developments, evolving standards, changes in customer requirements, and new product introductions and enhancements in a rapidly changing business environment. As a result, Cisco's success has depended, in part, upon Cisco's

ability, on a cost-effective and timely basis, to continue to enhance its existing products and to develop and introduce new products that improve performance and reduce the total cost of ownership. Cisco further states that its markets are highly competitive, which requires a wide variety of technologies, products, and capabilities. The combination of technological complexity and rapid changes within the markets makes it difficult for a single company to develop a wide range of technological solutions. Thus, Cisco employs the following strategies to address the need for new or enhanced networking and communications products and services: [27]

- Develop new technologies and products internally
- Acquire all or part of other companies
- Enter into joint-development efforts with other companies
- Resell other companies' products

As for internal innovation, Cisco reported R&D cost of $5.3 billion, and $5.2 billion in fiscal 2010 and 2009, respectively. Cisco compared its R&D and commitment with competitors in their corporate overview in 2011 as described in Fig. 4-3.

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[27] Capron, L. and Brueller, N. (2010)

Table 4-3: R&D Cost Comparison in the Information Technology Industry

	Cisco	Intel	Microsft	IBM	HP
R&D cost as % of Revenue	13%	14%	14%	6%	3%

As for partnership strategy, Cisco requirements for partnership are 1) mutually beneficial, 2) best in class, and 3) long-term partnership.[28]

Another key strategy of Cisco's technology management is its employee retention strategy especially for product development. After acquisition, Cisco typically lets is product development team work autonomously. Cisco also states that the retention of the engineers, especially current engineers, is the key for technology development in future generations. Thus, Cisco's top management monitors employee retention carefully. This careful management style reflects the result of the retention record of Cisco as significantly better than the average in Silicon Valley firms. This strategy shows Cisco's commitment to acquired technology in the long term.[29]

4-4 Cisco's Value Creation

Cisco is well known for its effective management of acquisitions. Cisco's

[28] Cisco Systems Inc Corporate website http://www.cisco.com/

[29] Mayer, D. and Kenney, M. (2004)

effective acquisition strategy stems from the fact that it focuses mostly on small acquisitions rather than larger or mature companies. These small companies typically do not have more than 75 employees 75% of whom are engineers. Cisco often compares its acquisitions to a marriage and raising children, emphasizing its long-term commitment to each acquisition. Likewise, Cisco calls its acquisitions "Cisco kids".

To enhance its synergies with "Cisco kids", Cisco management uses specific evaluation criteria before decision making on the acquisition and post merger integration process. Cisco uses five criteria for evaluating potential acquisition of target companies. :

- Must have a same vision about where the industry is going, what role each company wants to play in the industry,
- Must want to ensure "quick wins" for shareholders,
- Must have long-term wins for all four constituencies: shareholders, employees, customers and business partners,
- Chemistry has to be right,
- In large acquisitions, geography is key for the management and decision making process.

Cisco typically integrates acquired companies instead of stand-alones, by a series of numerous acquisitions. Cisco has established a post-merger integration process that focused on three goals: 1) employee retention, 2) follow-up on new product development, and 3) returns on investment. [30] Cisco provides information like Cisco's corporate News, Frequently Asked Questions, Contact Listings, and other valuable information to staff members of its newly acquired companies through their corporate website. On the web page, the purpose of the website is stated along with all of Cisco's companies. This may also create good cross-functional information-sharing opportunities among the "Cisco Kids".

> *This Web site has been specifically designed for newly acquired employees and will provide up-to-date materials tailored to the specific integrations. There will be News, Frequently Asked Questions, Contact Listings, and other valuable information. The purpose is to make sure that the entire integration process proceeds as smoothly as possible, and keeps employees informed every step of the way.*[31]

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[30] Laurence Capron and Nir Brueller, 2010 *"Cisco Systems: New Millennium – New Acquisition Strategy?"* , INSEAD

[31] Cisco Systems Inc Corporate website http://www.cisco.com/

Cisco enables its newly acquired companies' product development teams to work autonomously, but it merges its sales, marketing and customer service functions with Cisco fairly quickly. Cisco measures the success of the small-to-medium size acquisitions as investment returns within three years.

4-5 Cisco's New Acquisition Trend

Some changes in Cisco's acquisition pattern can be observed when the company acquired Linksys in 2003 for $500 million. Linksys was a mid-sized company with 308 employees. Cisco also acquired Scientific-Atlanta, a larger sizes company with 7,500 employees in 2005 for $6.9 billion. Interesting strategic change was that Cisco let these companies run on stand-alone base, in stead of merger as a division of Cisco.

Cisco made its Linksys acquisition an internal case study, as can be found on Cisco's corporate website.[32] According to the case, the Linksys acquisition and integration was a challenge for Cisco as it was unlike Cisco's previous acquisitions. The case describes differences between the two companies, including (1) Cisco builds highly configurable products to order,

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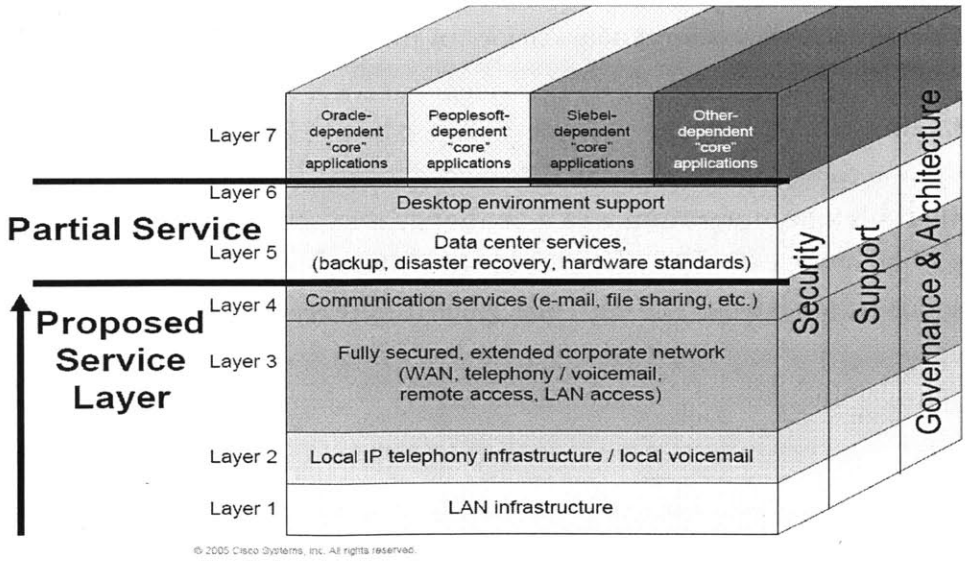
[32] Cisco IT Case Study, "How Linksys Successfully Integrated with the Cisco Network Infrastructure", Cisco Systems Inc. Corporate website http://www.cisco.com/

while Linksys builds off-the-shelf products based on forecast; (2) Cisco sells directly to enterprise and service providers while Linksys sells exclusively through its own channels, and (3) Cisco manages engineering and manufacturing activities internally while Linksys outsources them to Taiwan. The only similarity, albeit a major one, between Cisco and Linksys is that both companies provide networking products. Therefore, Linksys remained a separate division, signaling a change in Cisco's standard acquisition model. Cisco undertook a "selective integration" approach to integrate most infrastructures and some governance of Linksys. Fig. 4-1 describes Cisco's "selective integration" approach.

Fig. 4-1: Cisco's Selective Integration Options for Linksys Acquisition



Cisco's approach was to selectively integrate the elements in each category to increase synergy or reduce costs. However, the discovery process revealed little overlap between Cisco and Linksys, especially how the two companies handled sales and their ERP systems. This case study concludes with details of Cisco's success in integrating the Linksys network with the Cisco global IP network, which resulted in raising Linksys's network performance and allowed it to do so at lower costs. The case study also concluded that Governance issues and HR system of the two companies were fully integrated as well. However, in May 2011, a rumor surfaced in the market that Cisco is considering to sell off Linksys due to lack of synergy in the consumer market strategy.[33]

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[33] http://www.forbes.com/sites/greatspeculations/2011/03/04/cisco-should-consider-losing-linksys-selling-scientific-atlanta/

Chapter 5 Conclusion

5-1 Comparison Summary

After examining three different acquisition and management models of technology-based firms — Novus by Mitsui & Co., Momentive by Apollo and Cisco Kids by Cisco in this chapter, a comparative analysis of those three models is presented.

5-2 Value Creation

Mitsui & Co.'s value creation through its acquisition and management of Novus was based on Mitsui & Co's knowledge of the feed additive market and products built through an accumulated knowledge from its historical trading business and experiences of acquisitions and management of Bioproducts. Mitsui & Co. provided global market information on products other than Methionine and on feed additives in general, which enabled Novus to create a complete value chain analysis to enable it to become a global feed-additive player.

Apollo's value creation through the acquisition and management of Momentive Performance Group was based on a financial and a consultant

approach. Apollo implemented strategic cost- and working-capital-reduction initiatives to drive free cash flow. One successful approach was its shared-services agreement between the two group companies to achieve cost cutting benefits. The other approach was by utilizing Apollo's financial expertise to support the two companies' financial activities.

Cisco's value creation through acquisition and management of the "Cisco Kids" was based on Cisco's five distinct evaluation criteria used in deciding to acquire and integrate the firms, and after the acquisition. Cisco used a very clear strategy for its selection process, one that would ensure synergy creation through acquisition of the technology.

By comparison of these three models, all companies utilized their unique expertise to create value through their acquisitions. Therefore, regardless of the type of company — private equity, trading and investment or technology-based — it is essential that the acquirer's expertise match that of the acquired firms' in order to create synergy upon the acquisition and post-acquisition management of technology-based firms.

A 2011 study by Ulrich Pidun, et al, defines an acquiring corporation's best possible match and its resulting synergy with an acquired company as the "parenting advantage". This synergy creation by the parent company is

described[34]:

In order to create value, the characteristics of the corporate parent must be well suited to the critical success factors of its business and their specific needs and opportunities. Corporate parents must focus on how their parenting approach can create value for their businesses.

5-3 Integration

The aim of Mitsui & Co.'s post-merger integration process of Novus was not to discourage Monsanto employees. At the first board meeting on the day of acquisition completion, Mitsui & Co. rewrote the vision of Novus to be the global leader in Methionine business. Mitsui & Co. appointed experienced American managers in the top management positions. Mitsui & Co. clarified what the management team could and could not do, then basically respected them and gave them autonomy to run Novus.

The aim of Apollo's post-merger integration process of Momentive was to maintain the same management team to keep the goals, values, and vision of Momentive same. Then, using a typical private equity approach, after

[34] Pidun, U., Rubner, H., Kruhler, M., Untiedt, R. and The Boston Consulting Group, (2011).

acquisition of the two companies, Apollo contracted administrative service agreement and management and consulting agreement between the two companies. Apollo set the annual fee under the agreement as $3-4 million.

Cisco has typically integrated its acquired companies within its organization instead of letting them operate as stand-alones. Cisco established a successful post-merger integration process that focused on three goals, (1) employee retention, (2) follow up on new product development, and (3) increasing returns on investment. Cisco has provided integration information to its acquired companies through its corporate website. Cisco has a clear strategy and procedure for integrating small sized companies. However, Cisco has been struggling with its larger size company acquisitions.

By comparing these three models, no clear similarities emerge among their integrations. On the other hand, Cisco has been struggling with the integration of its mid-large size company, Apollo's integration of Hexion, but Momentive's formation/integration appears to have been smooth and successful.

John Donahue, CEO of eBay, commented in his recent speech to the Sloan Fellows class of 2012 about mergers and acquisitions that "systems, HR and

back office work can be integrated rather easily with the right procedures as a matter of time. However, integration of the corporate culture is very difficult and must be done very careful.

5-4 Management of Technology

The aim of Mitsui & Co.'s management of Novus and its technology was to respect and not change its corporate culture. Retention of R&D staff was a key strategy in the management of technology. In Novus's corporate website, their commitment and history of product development is well described.[35]

Apollo's management of technology approach for both Momentive Specialty Chemicals and Momentive Performance Materials is stated in their 10K reports as "committed to technology development". However, as the number of patents filed shows, during the acquisition period, some potential disruption in R&D work occurred in Momentive Specialty Chemicals. On the other hand, for Momentive Performance Materials, as for the former General Electric Advanced Materials' division, like Novus, continuous R&D work can be observed by constant spending on R&D.

Cisco assumes that employee retention, especially R&D staff, is closely

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[35] Novus International Inc. Corporate website http://www.novusint.com/

linked to success. This is very critical and closely relating to the deal's success or failure since if a deal does not succeed then generally staff leave; on the other hand, if a deal is succeeding then staff remain. Cisco's retention strategy's success is shown by the fact that most of the entire Crescendo workforce remained at Cisco.

By comparison of three models, two conclusions can be drawn. One, retention of R&D employees is very critical for a firm's future product development. Second, keeping the technology oriented corporate culture to the acquired firm's is critical.

Dr. Norman Coleman, Associate Director of Radiation Research Program, commented in a personal interview on April 2012, on the importance of the right "environment" for innovation success:

> *In my view of "success", financial profit may be a goal of stock investors but success also includes the ability to retain creativity and that comes with the ability to maintain an "environment" in which creative people can work and want to work.*

5-5 Conclusion

In conclusion, the lessons learned here include three key steps that acquiring companies can take to support the successful acquisition and management of technology-based firms:

1. Create synergy by utilizing own expertise and functions through acquisition is very basic but very important.
2. Integrating companies is not an easy process. Corporate culture and business synergy must be considered carefully during the integration process.
3. For the optimal management of technology, retention of R&D employees and maintaining a technology-oriented corporate culture and environment are very critical for firm's future product development.

Appendix

Appendix A Financial Performance of Five Major Japanese Trading Firms

	2011	2010	2009	2008	2007	2006	2005	2004	2003
Mitsui & Co. LTD									
Profit After Tax (PAT)	307	150	178	410	302	202	121	68	31
Equity Earnings of Associated Companies	242	132	121	213	213	94	64	40	15
Mitsubishi Corporation									
Profit After Tax (PAT)	463	275	370	471	419	356	187	118	63
Equity Earnings of Associated Companies	161	113	157	155	152	125	100	57	45
Sumitomo Corporation									
Profit After Tax (PAT)	203	155	215	239	211	160	85	67	14
Equity Earnings of Associated Companies	92	76	90	57	70	51	37	21	10
ITOCHU Corporation									
Profit After Tax (PAT)	161	128	165	217	175	145	78	-32	20
Equity Earnings of Associated Companies	61	36	41	70	-20	52	32	23	19
Marubeni Corporation									
Profit After Tax (PAT)	137	95	111	147	119	74	41	35	30
Equity Earnings of Associated Companies	71	29	22	56	45	19	12	14	13
Grand Total of 5 Trading Companies									
Profit After Tax (PAT)	1,271	803	1,039	1,484	1,226	937	512	256	158
Equity Earnings of Associated Companies	627	386	431	551	460	341	245	155	102

Appendix B Novus International Inc. Patent Filing Data

Company	Approved Date	Filed Date	Patent Name
Novus International, Inc.	22-Mar-11	19-Feb-07	Antioxidant combinations for use in feed rations to increase milk production and milk fat
Novus International, Inc.	7-Dec-10	12-Mar-04	Methods and compositions for the control of coccidiosis
Novus International, Inc.	16-Dec-08	11-Mar-05	Palatability of aquaculture feed
Novus International, Inc.	26-Feb-08	27-Feb-03	Use of dihydroquinoline to aid in increasing milk production and feed utilization
Novus International, Inc.	26-Feb-08	1-Sep-06	Marine antifouling coating compositions
Novus International, Inc.	6-Sep-05	2-May-02	Enantioselective oligomerization of .alpha.-hydroxy carboxylic acids and .alpha.-amino acids
Novus International, Inc.	9-Nov-04	16-Nov-01	Process for optimizing milk production
Novus International, Inc.	15-Jun-04	7-Aug-00	In vitro digestibility assay
Novus International, Inc.	11-May-04	26-Feb-01	Nutrient formulation and process for enhancing the health, livability, cumulative weight gain or feed efficiency in poultry and other animals
Novus International, Inc.	12-Aug-03	30-Oct-00	Oligomers and oligomeric segments of alpha-hydroxy carboxylic acids and alpha-amino acids
Novus International, Inc.	20-May-00	21-Jan-00	Inoculation apparatus and method
Novus International, Inc.	15-Apr-03	5-Oct-01	Process for the preparation of 3-(methylthio)propanal
Novus International, Inc.	1-Oct-02	22-Dec-00	Continuous hydrolysis process for the preparation of 2-hydroxy-4-methylthiobutanoic acid
Novus International, Inc.	5-Feb-02	14-Feb-00	Viability assay for sporocyst-forming protozoa
Novus International, Inc.	29-Jan-02	4-Aug-00	Reductive combustion of ammonium salts of sulfuric acid
Novus International, Inc.	11-Dec-01	15-Jun-99	Nutrient formulation and process for enhancing the health, livability, cumulative weight gain or feed efficiency in poultry and other animals
Novus International, Inc.	20-Nov-01	22-Dec-99	Process for the preparation of 3-(methylthio) propanal
Novus International, Inc.	20-Nov-01	26-Oct-00	Process for optimizing milk production
Novus International, Inc.	31-Jul-01	2-Oct-98	Continuous hydrolysis process for preparing 2-hydroxy-4-methylthiobutanoic acid or salts thereof
Novus International, Inc.	3-Apr-01	17-Jun-99	Nutrient formulation and process for enhancing the health, livability, cumulative weight gain or feed efficiency in poultry and other animals
Novus International, Inc.	27-Mar-01	23-Jul-98	Apparatus and process for separating components of a treatment mixture from waste water treatment system
Novus International, Inc.	6-Feb-01	15-Jun-99	Process for optimizing milk production
Novus International, Inc.	26-Dec-00	2-Oct-98	Continuous hydrolysis process for the preparation of 2-hydroxy-4-methylthiobutanoic acid
Novus International, Inc.	5-Sep-00	23-Jul-98	Treatment process for recovering components of a float material from waste water
Novus International, Inc.	29-Feb-00	22-Jun-98	Process for the preparation of 3-(methylthio) propanal
Novus International, Inc.	25-Jan-00	25-Jul-97	Process for optimizing milk production
Novus International, Inc.	7-Dec-99	13-Jun-97	Continuous hydrolysis process for the preparation of 2-hydroxy-4-methylthiobutanoic acid
Novus International, Inc.	16-Nov-99	24-May-96	Nutrient formulation and process for feeding young poultry and other animals
Novus International, Inc.	9-Nov-99	23-Apr-96	Integrated system monitoring use of materials, controlling and monitoring delivery of materials and providing automated billing of
Novus International, Inc.	9-Nov-99	23-Jan-97	Process for recovering components of a float material from waste water treatment system
Novus International, Inc.	2-Nov-99	6-Dec-96	Nutrient formulation and process for enhancing the health, livability, cumulative weight gain or feed efficiency in poultry and other animals
Novus International, Inc.	26-Oct-99	20-Jan-98	Process for the preparation of 2-hydroxy-4-(methylthio) butanoic acid or methionine by mercaptan addition
Novus International, Inc.	27-Jul-99	7-Jun-95	Nutrient formulation and process for feeding young poultry and other animals
Novus International, Inc.	20-Jul-99	20-Jun-96	Process for the preparation of 3-(methylthio)propanal
Novus International, Inc.	18-May-99	20-Jun-96	Process for the preparation of 3-(methylthio)propanal
Novus International, Inc.	9-Mar-99	13-Dec-96	Fluid transfer system
Novus International, Inc.	2-Feb-99	28-Jan-97	Enzymatic conversion of .alpha.-hydroxynitriles to the corresponding
Novus International, Inc.	5-Jan-99	21-May-96	Continuous hydrolysis process for preparing 2-hydroxy-4-methylthiobutanioc acid or salts thereof
Novus International, Inc.	28-Apr-98	11-Jul-96	Process for the preparation of 3-(methylthio) propanal
Novus International, Inc.	6-Jan-98	29-Dec-95	Processes for the preparation of 3-(methylthio)propanal and 2-hydroxy-4-(methylthio)butanenitrile
Novus International, Inc.	23-Sep-97	21-Feb-96	Regeneration of sulfuric acid from sulfate by-products of 2-hydoxy-4-(methylthio) butyric acid manufacture
Novus International, Inc.	2-Sep-97	7-Jun-95	Process for the preparation of 3-(methylthio) propanal and 2-hydroxy-4-(methylthio) butanenitrile
Novus International, Inc.	10-Jun-97	13-Nov-95	Process for the preparation of 3-(methylthio) propanal
Novus International, Inc.	9-Jul-96	10-Jan-94	Portable storage and dispensing system
Novus International, Inc.	12-Mar-96	9-Jun-93	Regeneration of sulfuric acid from sulfate by-products of 2-hydroxy-4-(methylthio)butyric acid manufacture
Novus International, Inc.	4-Oct-94	8-Jun-93	Process for the preparation of 3-(methylthio)propanal

Appendix C Apollo Global Management Acquisition Record

Company	Year	Company Description
AMC Entertainment	2001	Entertainment Industry acquistion at $250 million.
Hexion Speciality Chemicals	2005	Series of chemical industry acquistions, Borden Chemical, Resolutions Performance Products, Resolution Specialty Material
Berry Plastics	2006	Chemical Plastic Industry acquistion.
CEVA Logistics	2006	Logistics Industry acquistion at $1.9 billion.
Harrah's Entertainment	2006	Gaming company in entertainment industry acquistion at $27.4 billion with TPG Capital.
Jacuzzi Brands	2006	Manufacture of whirlpool bath acquistion at $990 million.
Linens'n Things	2006	Home textiles and products retailer acquistion at $1.3 bllion.
Momentive Performance Materials	2006	General Electric's advanced materials acquistion at $3.8 billion.
Noranda Aluminium	2006	Aluminium Industry acquistion at $1.15 billion.
Realogy	2006	Real estate franchisor acquistion at $8.5illion, including Coldwell Banker, Sotheby's International Realty, and Century 21 Real
Rexnord	2006	Precision motion technology products acquistion at $1.83 billion.
Verso Paper	2006	Coated paper Industry acquistion at $1.4 billion.
Claire's	2007	Costume jewery retailer acquistion at $3.1 billion.
Countrywide plc	2007	UK based residential property related service industry acquistion at $1.1 billion.
Oceania Cruise	2007	Luxury cruise line operator acquistion.
Smart & Final	2007	Warehouse style food and supply store acquistion, including Henry's Marketplace andSprouts Farmers Market.
Norwegian Cruise Line	2008	Luxury cruise line operator acquistion at $1 billion.
Regent Seven Seas Cruises	2008	Luxury cruise line operator acquistion at $1 billion.

Appendix D Momentive Specialty Chemicals Patent Filing Data

Company	Approved Date	Filed Date	Patent Name
Momentive Specialty Chemicals Inc.	6-Mar-12	27-May-10	Methods and compositions for determination of fracture geometry in subterranean formations
Momentive Specialty Chemicals Inc.	14-Jun-11	26-Apr-10	Esterification process of polyols with tertiary alkyl substituted acids
Momentive Specialty Chemicals Inc.	22-Nov-11	24-Feb-10	Gypsum wood fiber articles and methods of making same
Momentive Specialty Chemicals Inc.	25-Oct-11	1-Oct-09	Adhesion-promoting agent for a thermal insulation surface
Hexion Specialty Chemicals, Inc.	5-Oct-10	10-Jul-09	Lignocellulosic products and methods for their manufacture
Momentive Specialty Chemicals Inc.	17-Jan-12	6-May-09	Analysis of radar ranging data from a down hole radar ranging tool for determining width, height, and length of a subterranean fracture
Momentive Specialty Chemicals Inc.	13-Dec-11	27-Jan-09	Triglyceride compositions useful for preparing composite panels and applications thereof
Momentive Specialty Chemicals Inc.	26-Apr-11	11-Nov-08	Method and tool for determination of fracture geometry in subterranean formations based on in-situ neutron activation analysis
Momentive Specialty Chemicals Inc.	3-Jan-12	25-Jun-08	Storage stable melamine-urea-formaldehyde resins and applications thereof
Momentive Specialty Chemicals Inc.	27-Mar-12	9-Jun-08	Adhesive composition
Momentive Specialty Chemicals Inc.	2-Aug-11	14-Dec-07	Phenol-formaldehyde resole resins, method of manufacture, methods of use, and articles formed therefrom
Momentive Specialty Chemicals Inc.	27-Sep-11	25-Oct-07	Aqueous resin dispersion, process of making thereof, and product
Hexion Specialty Chemicals, Inc.	1-Dec-09	22-Mar-07	Low temperature coated particles for use as proppants or in gravel packs, methods for making and using the same
Hexion Specialty Chemicals, Inc.	15-Jun-10	28-Dec-06	Esterification process of polyols with tertiary alkyl substituted acids
Hexion Specialty Chemicals, Inc.	6-Oct-09	13-Sep-06	Method for using logging device with down-hole transceiver for operation in extreme temperatures
Hexion Specialty Chemicals, Inc.	11-Nov-08	13-Sep-06	Logging device with down-hole transceiver for operation in extreme temperatures
Hexion Specialty Chemicals, Inc.	1-Jun-10	9-Aug-06	Methods and compositions for determination of fracture geometry in subterranean formations
Hexion Specialty Chemicals, Inc.	28-Sep-10	18-May-06	Wood composites, methods of production, and methods of manufacture thereof
Hexion Specialty Chemicals, Inc.	20-May-08	25-Apr-06	Wax emulsions for gypsum products
Momentive Specialty Chemicals Inc.	6-Sep-11	26-Jan-06	Duroplastic-bonded molded fiber parts and method for producing the
Hexion Specialty Chemicals, Inc.	29-Jan-08	12-Oct-05	Phenol-formaldehyde resole resins, method of manufacture, methods of use, and articles formed therefrom
Hexion Specialty Chemicals, Inc.	16-Sep-08	4-Oct-05	Method of estimating fracture geometry, compositions and articles used for the same
Momentive Specialty Chemicals Inc.	5-Apr-11	20-Sep-05	Particles for use as proppants or in gravel packs, methods for making and using the same
Hexion Specialty Chemicals, Inc.	13-Nov-07	2-Sep-05	Wax emulsion preservative compositions and method of manufacture
Hexion Specialty Chemicals, Inc.	9-Nov-10	8-Oct-04	Coating compositions comprising an aqueous dispersion of film-forming polymer and a silicone polyether, process for the preparation thereof and uses thereof, in particular as an antisoiling coating
Hexion Specialty Chemicals, Inc.	28-Aug-07	24-Jun-04	Time released curing system
Hexion Specialty Chemicals, Inc.	10-Feb-09	3-Jun-04	Gypsum products and method for their manufacture
Hexion Specialty Chemicals, Inc.	21-Jul-09	20-May-04	Emulsions for lignocellulosic products, methods of their manufacture, improved lignocellulosic products and methods for their manufacture
Hexion Specialty Chemicals, Inc.	18-Sep-07	15-Apr-04	Particulate material containing thermoplastics and methods for making and using the same
Hexion Specialty Chemicals, Inc.	14-Aug-07	15-Mar-04	Storage-stable acrylate-functional alkyd resin compositions
Hexion Specialty Chemicals, Inc.	28-Aug-07	20-Jan-04	Resin composition
Hexion Specialty Chemicals, Inc.	2-Mar-10	12-Dec-03	Method for enhancing water-repellency treatment of mineral hydraulic binder compositions and compositions obtainable by said method and their uses
Hexion Specialty Chemicals, Inc.	23-Oct-07	13-Nov-03	Aqueous dispersions containing multi-stage emulsion polymers
Hexion Specialty Chemicals, Inc.	22-Sep-09	22-Sep-03	Epoxy resin compositions, processes utilizing same and articles made therefrom
Hexion Specialty Chemicals, Inc.	13-Mar-07	12-Aug-03	Processes to produce water-dispersible polyester stabilized, acid-treated, fluoroalkyl compositions
Hexion Specialty Chemicals, Inc.	6-Mar-07	12-Aug-03	Water-dispersible polyester stabilized fluoroalkyl compositions
Hexion Specialty Chemicals, Inc.	6-Feb-07	12-Aug-03	Processes to produce water-dispersible polyester stabilized fluoroalkyl compositions
Hexion Specialty Chemicals, Inc.	5-Sep-06	12-Aug-03	Water-dispersible polyester stabilized, acid-treated, fluoroalkyl
Hexion Specialty Chemicals, Inc.	5-Feb-08	26-Jun-03	Optical fiber ribbons containing radiation cured encapsulating materials
Hexion Specialty Chemicals, Inc.	13-Apr-10	5-Jun-03	Water-resistant additives for gypsum wood fiber products
Hexion Specialty Chemicals, Inc.	6-Jan-09	5-Jun-03	Additives for water-resistant gypsum products
Hexion Specialty Chemicals, Inc.	6-Jan-09	5-Jun-03	Emulsions for composite materials
Hexion Specialty Chemicals, Inc.	2-Oct-07	19-May-03	Amide-modified resin or hydrocarbyl moiety for dispersing a pigment
Hexion Specialty Chemicals, Inc.	11-Jul-06	29-Apr-03	System for treating an underground formation
Hexion Specialty Chemicals, Inc.	3-Jul-07	23-Apr-03	Methods for making and using point lump-free compositions and products coated with point lump-free compositions
Hexion Specialty Chemicals, Inc.	15-Apr-08	21-Aug-02	Epoxy resin curing agent of epoxy resin-liquid amine adduct and polyamidoamine
Hexion Specialty Chemicals, Inc.	19-Dec-06	2-Jul-02	Manufacturing process for the preparation of .alpha.,.alpha.-branched alkane carboxylic acids providing esters with an improved softness
Hexion Specialty Chemicals, Inc.	31-Oct-06	12-Nov-01	Waterborne acrylic modified alkyd resins

Appendix E Momentive Performance Materials Patent Filing Data

Company	Approved Date	Filed Date	Patent Name
Momentive Performance Materials Inc.	26-Jul-11	16-Apr-10	Low VOC epoxy silane oligomer and compositions containing same
Momentive Performance Materials Inc.	4-Oct-11	16-Mar-10	Process for crosslinking thermoplastic polymers with silanes employing peroxide blends, the resulting crosslinked thermoplastic polymer composition and articles made therefrom
Momentive Performance Materials Inc.	8-Mar-11	5-Mar-10	Organosilicone compositions and methods for preparing them
Momentive Performance Materials Inc.	29-Nov-11	16-Feb-10	Silated cyclic core polysulfides, their preparation and use in filled elastomer compositions
Momentive Performance Materials Inc.	28-Jun-11	29-Jan-10	Incorporating an asymmetrical siloxane into a composition in need of hydrolysis resistance
Momentive Performance Materials Inc.	1-Feb-11	8-Jan-10	Low-foaming gas processing compositions and uses thereof
Momentive Performance Materials Japan LLC	4-Oct-11	9-Jul-09	Heat curing silicone rubber compound composition
Momentive Performance Materials Inc.	12-Jul-11	15-May-09	Laminate containing an adhesive-forming composition
Momentive Performance Materials Inc.	8-Mar-11	9-Apr-09	Rubber compositions comprising coupling agents for mineral-filled elastomer compositions
Momentive Performance Materials Inc.	20-Mar-12	9-Feb-09	Moisture-curable silylated polymer possessing improved storage
Momentive Performance Materials Inc.	28-Feb-12	30-Oct-08	Sulfur-containing cycloaliphatic compound, filled sulfur-vulcanizable elastomer composition containing sulfur-containing cycloaliphatic compound and articles fabricated therefrom
Momentive Performance Materials Inc.	9-Mar-10	30-Oct-08	Thiocarbamoyldisufanyl-functional cycloaliphatic compound, process for its preparation, filled sulfur-vulcanizable elastomer composition containing same and articles fabricated therefrom
Momentive Performance Materials Inc.	30-Aug-11	1-Oct-08	Process for the preparation of thiocarboxylate silane
Momentive Performance Materials Inc.	29-Dec-09	1-Oct-08	Packet for viscous material
Momentive Performance Materials Inc.	19-Apr-11	4-Sep-08	Wafer processing apparatus having a tunable electrical resistivity
Momentive Performance Materials Inc.	27-Mar-12	7-Aug-08	Activated halo-containing aralkylsilane composition, process of preparing same and rubber compositions made therefrom
Momentive Performance Materials Inc.	31-Aug-10	31-Jul-08	Sulfur-containing silane, filled elastomeric compositions containing same and articles made therefrom
Momentive Performance Materials Inc.	14-Dec-10	1-May-08	Low viscosity, high molecular weight linear random-block silicone polyalkyleneoxide copolymers
Momentive Performance Materials Inc.	22-Nov-11	23-Apr-08	Polyurethane foam-forming compositions containing polysilsesquioxane cell opening agents
Momentive Performance Materials Inc.	25-Oct-11	3-Apr-08	Polyurethane foams containing silicone surfactants
Momentive Performance Materials Inc.	4-Oct-11	25-Jan-08	Polyorganosiloxane demulsifier compositions and methods of making the same
Momentive Performance Materials Inc.	24-May-11	2-Jan-08	Extended-baking process for glass deposition tubes
Momentive Performance Materials Inc.	17-Aug-10	17-Dec-07	Electrode tuning method and apparatus for a layered heater structure
Momentive Performance Materials Inc.	24-Feb-09	17-Dec-07	Nanosized copper catalyst precursors for the direct synthesis of trialkoxysilanes
Momentive Performance Materials Inc.	1-Feb-11	10-Dec-07	Hydrolysis resistant organomodified silylated ionic surfactants
Momentive Performance Materials Inc.	24-Aug-10	14-Nov-07	Two-part moisture-curable resin composition and adhesive, sealant and coating compositions based thereon
Momentive Performance Materials Inc.	6-Dec-11	31-Oct-07	Hydraulic container evacuator and method
Momentive Performance Materials Inc.	19-Oct-10	31-Oct-07	Halo-functional silane, process for its preparation, rubber composition containing same and articles manufactured therefrom
Momentive Performance Materials Inc.	22-Sep-09	25-Oct-07	Controlled material processing method
Momentive Performance Materials Japan LLC	6-Mar-12	19-Oct-07	Curable polyorganosiloxane composition
Momentive Performance Materials Inc.	31-Mar-09	19-Oct-07	Process for the production of crosslinked polymer employing low VOC-producing silane crosslinker and resulting crosslinked polymer
Momentive Performance Materials Inc.	5-Jan-10	5-Oct-07	Method for forming nitride crystals
Momentive Performance Materials Inc.	14-Dec-10	17-Aug-07	Film forming composition with spreading properties
Momentive Performance Materials Inc.	7-Sep-10	24-Jul-07	Organo-functional silicone in emulsion systems and process for preparing same
Momentive Performance Materials Inc.	7-Sep-10	13-Jul-07	Curable and cured silicone rubber compositions and methods therefor
Momentive Performance Materials Inc.	4-Aug-09	27-Jun-07	Curable silyl-containing polymer composition containing paint adhesion additive
Momentive Performance Materials Inc.	21-Jul-09	19-Jun-07	Viscous polyorganosiloxane fluid dispenser
Momentive Performance Materials Inc.	22-Nov-11	13-Jun-07	Moisture-curable, graft-modified resin composition, process for its manufacture and process for bonding substrates employing the resin composition
Momentive Performance Materials Inc.	1-Mar-11	7-Jun-07	Hydrosilylating an isolated monohydridosiloxane
Momentive Performance Materials Inc.	24-May-11	28-May-07	Asymmetrical siloxane
Momentive Performance Materials Inc.	20-Oct-09	28-May-07	Selective hydrosilylation method with alcohol or epoxide reactant and product
Momentive Performance Materials Inc.	28-Dec-10	21-May-07	Nanosized copper catalyst precursors for the direct synthesis of trialkoxysilanes
Momentive Performance Materials Inc.	16-Nov-10	30-Apr-07	Cosmetic compositions utilizing acrylate cross linked silicone copolymer networks
Momentive Performance Materials Inc.	30-Mar-10	30-Apr-07	Acrylate cross linked silicone copolymer networks
Momentive Performance Materials Inc.	25-Jan-11	24-Apr-07	Method of applying an anti-corrosion and/or adhesion promoting coating to a metal and resulting coated metal
Momentive Performance Materials Inc.	3-Jan-12	30-Mar-07	Hydrolyzable silanes of low VOC-generating potential and resinous compositions containing same
Momentive Performance Materials Inc.	9-Aug-11	27-Mar-07	Architectural unit possessing rapid deep-section cure silicone rubber component
Momentive Performance Materials Inc.	4-Jan-11	27-Mar-07	Process for making hydrolyzable silylated polymers
Momentive Performance Materials GmbH	18-Jan-11	26-Mar-07	Surface active organosilicone compounds
Momentive Performance Materials Inc.	2-Aug-11	9-Mar-07	Epoxysilanes, processes for their manufacture and curable compositions containing same
Momentive Performance Materials Inc.	28-Dec-10	5-Mar-07	Flexible thermal cure silicone hardcoats
Momentive Performance Materials Inc.	1-Dec-09	8-Feb-07	Rubber composition, process of preparing same and articles made therefrom
Momentive Performance Materials Inc.	1-Feb-11	29-Jan-07	Method for making sintered cubic halide scintillator material
Momentive Performance Materials Inc.	23-Jun-10	21-Jan-07	Encapsulated graphite heater and process
Momentive Performance Materials Inc.	28-Dec-10	9-Jan-07	Crystalline composition, wafer, device, and associated method
Momentive Performance Materials Inc.	29-Dec-09	9-Jan-07	Crystalline composition, wafer, and semi-conductor structure
Momentive Performance Materials Inc.	14-Jun-11	28-Dec-06	Free-flowing filler composition and rubber composition containing same
Momentive Performance Materials Inc.	24-Aug-10	28-Dec-06	Blocked mercaptosilane coupling agents, process for making and uses in rubber

Company	Approved Date	Filed Date	Patent Name
Momentive Performance Materials Inc.	15-Jun-10	28-Dec-06	Free-flowing filler composition and rubber composition containing same
Momentive Performance Materials Inc.	13-Apr-10	28-Dec-06	Silated core polysulfides, their preparation and use in filled elastomer compositions
Momentive Performance Materials Inc.	30-Mar-10	28-Dec-06	Silated cyclic core polysulfides, their preparation and use in filled elastomer compositions
Momentive Performance Materials Inc.	11-Oct-11	21-Dec-06	Wear resistant low friction coating composition, coated components, and method for coating thereof
Momentive Performance Materials Inc.	8-Dec-09	18-Dec-06	Hybrid silicon-containing coupling agents for filled elastomer
Momentive Performance Materials Inc.	13-Oct-09	28-Nov-06	Viscous material feed system with platen and method
Momentive Performance Materials Inc.	9-Nov-10	14-Nov-06	Adhesive-forming composition and blend of adhesives obtained
Momentive Performance Materials Inc.	31-Aug-10	13-Nov-06	Gallium nitride crystals and wafers and method of making
Momentive Performance Materials Inc.	5-May-09	9-Nov-06	Enhanced boron nitride composition and compositions made therewith
Momentive Performance Materials Inc.	27-Oct-09	8-Nov-06	Controlled material processing device, controller and method
Momentive Performance Materials Inc.	1-Nov-11	1-Nov-06	Cable pulling apparatus and method for pulling thereof
Momentive Performance Materials Inc.	8-Mar-11	1-Nov-06	Lubricant composition and cable pulling method
Momentive Performance Materials Inc.	28-Apr-09	28-Oct-06	Enhanced boron nitride composition and compositions made therewith
Momentive Performance Materials Inc.	21-Jun-11	17-Oct-06	Fluorine-free trisiloxane surfactant compositions for use in coatings and printing ink compositions
Momentive Performance Materials Inc.	15-Jul-08	17-Oct-06	Fluorine-free disiloxane surfactant compositions for use in coatings and printing ink compositions
Momentive Performance Materials Inc.	8-Mar-11	16-Oct-06	Heating apparatus with enhanced thermal uniformity and method for making thereof
Momentive Performance Materials Inc.	2-Mar-10	13-Oct-06	Process for producing controlled viscosity fluorosilicone polymers
Momentive Performance Materials Inc.	2-Sep-08	12-Oct-06	Durable graphite connector and method for manufacturing thereof
Momentive Performance Materials Inc.	25-Dec-07	11-Oct-06	Semiconductor batch heating assembly
Momentive Performance Materials Inc.	14-Jul-09	6-Oct-06	Mercaptofunctional silane and process for its preparation
Momentive Performance Materials Inc.	23-Jun-09	6-Oct-06	Elastomer composition containing mercaptofunctional silane and process for making same
Momentive Performance Materials Inc.	14-Sep-10	29-Sep-06	Fastener for a viscous material container evacuator and method
Momentive Performance Materials Inc.	31-Aug-10	29-Sep-06	Viscous material metering system and method
Momentive Performance Materials Inc.	8-Jun-10	21-Sep-06	Process for preparing a curable silylated polyurethane resin
Momentive Performance Materials Inc.	27-Apr-10	14-Sep-06	Heater, apparatus, and associated method
Momentive Performance Materials Inc.	19-Jan-10	1-Sep-06	Branched polysiloxane composition
Momentive Performance Materials Inc.	14-Jul-09	1-Sep-06	Composition containing anti-misting component
Momentive Performance Materials Inc.	17-Jan-12	14-Aug-06	Free flowing filler composition comprising mercapto-functional silane
Momentive Performance Materials Inc.	30-Aug-11	14-Aug-06	Process for making mercapto-functional silane
Momentive Performance Materials Inc.	16-Nov-10	14-Aug-06	Selective hydrosilylation method with rhodium catalyst
Momentive Performance Materials Inc.	9-Nov-10	14-Aug-06	Tetramethyl siloxane reaction
Momentive Performance Materials Inc.	23-Jun-09	14-Aug-06	Rubber composition and articles therefrom both comprising mercapto-functional silane
Momentive Performance Materials Inc.	6-May-08	14-Aug-06	Mercapto-functional silane
Momentive Performance Materials Inc.	30-Aug-11	30-Jun-06	Extreme environment surfactant compositions comprising hydrolysis resistant organomodified disiloxane surfactants
Momentive Performance Materials Inc.	26-Jan-10	30-Jun-06	Hydrolysis resistant organomodified disiloxane surfactants
Momentive Performance Materials Inc.	4-Jan-11	26-Jun-06	Swollen silicone composition, process of producing same and products thereof
Momentive Performance Materials Inc.	29-Jun-10	22-Jun-06	Method for demulsifying
Momentive Performance Materials Inc.	30-Sep-08	9-Jun-06	Process for the direct synthesis of trialkoxysilane
Momentive Performance Materials Inc.	10-Jul-07	2-Jun-06	Process for crosslinking thermoplastic polymers with silanes employing peroxide blends and the resulting crosslinked thermoplastic polymers
Momentive Performance Materials Inc.	12-May-09	31-May-06	Coupling agents for mineral-filled elastomer compositions
Momentive Performance Materials Inc.	20-Apr-10	22-May-06	Use of hydrolysis resistant organomodified silylated surfactants
Momentive Performance Materials Inc.	14-Mar-10	10-Apr-06	Low-foaming gas processing compositions and uses thereof
Momentive Performance Materials Inc.	5-May-09	6-Apr-06	Architectural unit possessing translucent silicone rubber component
Momentive Performance Materials GmbH	13-Dec-11	30-Mar-06	Polyamino and/or polyammonium/polysiloxane copolymer compounds with polyalkylene oxide units in comb-shaped arrangement
Momentive Performance Materials Inc.	5-Apr-11	21-Feb-06	Organofunctional silanes and their mixtures
Momentive Performance Materials Inc.	18-May-10	21-Feb-06	Process for making organofunctional silanes and mixtures thereof
Momentive Performance Materials Inc.	31-Mar-09	21-Feb-06	Free flowing filler composition based on organofunctional silane
Momentive Performance Materials Inc.	17-Mar-09	21-Feb-06	Rubber composition containing organofunctional silane
Momentive Performance Materials Inc.	3-May-11	9-Feb-06	Hydrolysis resistant organomodified trisiloxane surfactants
Momentive Performance Materials Inc.	30-Nov-10	2-Feb-06	Paper release compositions having improved adhesion to paper and polymeric films
Momentive Performance Materials Inc.	4-Aug-09	1-Feb-06	Sealant composition having reduced permeability to gas
Momentive Performance Materials Inc.	2-Jun-09	1-Feb-06	Insulated glass unit with sealant composition having reduced permeability to gas
Momentive Performance Materials Inc.	8-Jun-10	27-Jan-06	Low VOC epoxy silane oligomer and compositions containing same
Momentive Performance Materials Inc.	30-Mar-10	20-Jan-06	Insulated glass unit with sealant composition having reduced permeability to gas
Momentive Performance Materials Inc.	12-May-09	20-Jan-06	Inorganic-organic nanocomposite
Momentive Performance Materials Inc.	12-Jul-11	6-Jan-06	Boron nitride particles of spherical geometry and process for making thereof
Momentive Performance Materials Inc.	4-Nov-08	30-Dec-05	Etch resistant wafer processing apparatus and method for producing the same
Momentive Performance Materials Inc.	18-Oct-11	20-Dec-05	Crystalline composition, device, and associated method
Momentive Performance Materials Inc.	17-May-11	20-Dec-05	Apparatus for making crystalline composition
Momentive Performance Materials Inc.	3-May-11	20-Dec-05	Method for making crystalline composition
Momentive Performance Materials Inc.	26-Jan-10	16-Dec-05	Polyorganosiloxane composition, and associated method
Momentive Performance Materials Inc.	12-Jan-10	13-Dec-05	Extreme environment surfactant compositions comprising hydrolysis resistant organomodified disiloxane surfactants
Momentive Performance Materials Inc.	13-Oct-09	13-Dec-05	Gemini silicone surfactant compositions and associated methods
Momentive Performance Materials Inc.	24-Mar-09	13-Dec-05	Hydrolysis resistant organomodified disiloxane surfactants
Momentive Performance Materials Inc.	29-Sep-09	8-Dec-05	Epoxy silane oligomer and coating composition containing same
Momentive Performance Materials Inc.	29-Jul-08	8-Dec-05	Silylated polymer derived from butadiene and solvent-resistant pressure sensitive adhesive composition containing same
Momentive Performance Materials Inc.	30-Mar-10	6-Dec-05	Coating composition containing a low VOC-producing silane

Company	Approved Date	Filed Date	Patent Name
Momentive Performance Materials Inc.	1-Sep-09	6-Dec-05	Resonant cavity light emitting devices and associated method
Momentive Performance Materials Inc.	26-Aug-08	1-Dec-05	Crosslinkable silane-terminated polymer and sealant composition made with same
Momentive Performance Materials Inc.	28-Oct-08	28-Nov-05	Process for preparing unsaturated imidoalkoxysilanes
Momentive Performance Materials Inc.	6-May-08	28-Nov-05	Rubber compositions comprising unsaturated imidoalkoxysilanes
Momentive Performance Materials Inc.	5-Feb-08	25-Nov-05	Electrostatic chuck
Momentive Performance Materials Inc.	26-Jan-10	21-Nov-05	Process for the direct synthesis of trialkoxysilane
Momentive Performance Materials Inc.	9-Mar-10	18-Nov-05	Room temperature-cured siloxane sealant compositions of reduced gas permeability
Momentive Performance Materials Inc.	5-Feb-08	16-Nov-05	Process for the production of crosslinked polymer employing low VOC-producing silane crosslinker and resulting crosslinked polymer
Momentive Performance Materials Inc.	12-Sep-11	15-Nov-05	Swollen silicone composition and process of producing same
Momentive Performance Materials Inc.	22-Apr-08	14-Nov-05	Methods of making high fluorine content fluoro-silicone copolymers
Momentive Performance Materials Inc.	20-Jan-09	9-Nov-05	Silicone elastomer composition
Momentive Performance Materials Inc.	3-Aug-10	8-Nov-05	Silicone composition and process of making same
Momentive Performance Materials Inc.	24-Feb-09	4-Nov-05	Container for evaporation of metal and method to manufacture thereof
Momentive Performance Materials Inc.	22-May-07	4-Nov-05	Vacuum insulated heater assembly
Momentive Performance Materials Inc.	11-Mar-08	3-Nov-05	Process for producing boron nitride
Momentive Performance Materials Inc.	20-Nov-07	3-Nov-05	Process for producing boron nitride
Momentive Performance Materials Inc.	18-Nov-08	2-Nov-05	Process for treating synthetic silica powder and synthetic silica powder treated thereof
Momentive Performance Materials Inc.	17-Jun-08	28-Oct-05	Polyether siloxane copolymer network compositions
Momentive Performance Materials Inc.	28-Apr-09	27-Oct-05	Process for making moisture-curable silylated resin composition, the resulting composition and moisture-curable products containing the composition
Momentive Performance Materials Inc.	7-Jun-11	24-Oct-05	Solvent resistant polyurethane adhesive compositions
Momentive Performance Materials Inc.	6-May-08	13-Oct-05	Apparatus for producing single crystal and quasi-single crystal, and associated method
Momentive Performance Materials Inc.	4-Nov-08	12-Oct-05	Enhanced boron nitride composition and polymer-based compositions made therewith
Momentive Performance Materials Inc.	29-Apr-08	29-Sep-05	Process for the recovery of alkoxysilanes obtained from the direct reaction of silicon with alkanols
Momentive Performance Materials Inc.	14-Oct-08	14-Sep-05	Process for the continuous production of silylated resin
Momentive Performance Materials Inc.	29-Apr-08	14-Sep-05	Moisture curable silylated polymer containing free polyols for coating, adhesive and sealant application
Momentive Performance Materials Inc.	5-Feb-08	7-Sep-05	Method for production of high solids silicone resin coating solution
Momentive Performance Materials Inc.	19-Apr-11	19-Aug-05	Cyclic diol-derived blocked mercaptofunctional silane compositions
Momentive Performance Materials Inc.	5-May-09	27-Jun-05	Etchant, method of etching, laminate formed thereby, and device
Momentive Performance Materials Inc.	1-Nov-11	23-Jun-05	Cure catalyst, composition, electronic device and associated method
Momentive Performance Materials Inc.	4-Nov-08	23-Jun-05	Method for producing cure system, adhesive system, and electronic
Momentive Performance Materials Inc.	29-Jul-08	23-Jun-05	Cure system, adhesive system, electronic device
Momentive Performance Materials Inc.	2-Nov-10	3-Jun-05	Process for the production of isocyanatosilane and silylisocyanurate
Momentive Performance Materials Inc.	3-Jun-08	27-Apr-05	Cosmetic compositions using polyether siloxane copolymer network compositions
Momentive Performance Materials Inc.	15-Feb-11	14-Apr-05	Personal care compositions with enhanced properties, method of manufacture, and method of use thereof
Momentive Performance Materials Inc.	5-May-09	14-Apr-05	Aqueous catalytic process for the preparation of thiocarboxylate silane
Momentive Performance Materials Inc.	14-Jun-11	12-Apr-05	Diol-derived organofunctional silane and compositions containing same
Momentive Performance Materials Inc.	22-Feb-11	7-Apr-05	Epoxy silane oligomer and coating composition containing same
Momentive Performance Materials Inc.	27-Jan-09	22-Feb-05	Chromium free corrosion resistant surface treatments using siliconized barrier coatings
Momentive Performance Materials GmbH	7-Dec-10	22-Dec-04	Curable siloxane composition with modified surface properties
Momentive Performance Materials Inc.	1-Dec-09	10-Dec-04	High temperature high pressure capsule for processing materials in supercritical fluids
Momentive Performance Materials Japan LLC	27-Mar-12	3-Dec-04	Cosmetic hair composition
Momentive Performance Materials Inc.	14-Apr-09	3-Dec-04	Star-branched silicone polymers as anti-mist additives for coating applications
Momentive Performance Materials GmbH	1-Mar-11	25-Nov-04	Polyorganosiloxane compositions for the treatment of substrates
Momentive Performance Materials Inc.	8-Jul-08	10-Nov-04	Electrostatic chuck including a heater mechanism
Momentive Performance Materials Inc.	29-Apr-08	4-Oct-04	Method for forming fused quartz using deuterium
Momentive Performance Materials Japan LLC	6-Apr-10	29-Sep-04	Thermal conductive silicone composition
Momentive Performance Materials Inc.	12-May-09	13-Aug-04	Silane compositions, processes for their preparation and rubber compositions containing same
Momentive Performance Materials Inc.	10-Jul-07	12-Aug-04	Silicone condensation reaction
Momentive Performance Materials Inc.	30-Aug-11	30-Jun-04	Process for the preparation of thiocarboxylate silane
Momentive Performance Materials Inc.	25-May-10	30-Jun-04	Shelf-stable silane-modified aqueous dispersion polymers
Momentive Performance Materials GmbH	4-Jan-11	7-Apr-04	Reactive amino-and/or ammonium polysiloxane compounds
Momentive Performance Materials Inc.	26-Jan-10	8-Mar-04	Stabilized polyorganosiloxane composition
Momentive Performance Materials Inc.	22-May-07	21-Jan-04	Bulk high thermal conductivity feedstock and method of making thereof
Momentive Performance Materials Inc.	29-Apr-08	16-Jan-04	Wafer handling apparatus and method of manufacturing thereof
Momentive Performance Materials Inc.	25-Aug-09	19-Dec-03	Active-releasing cyclic siloxanes
Momentive Performance Materials Inc.	18-Aug-09	19-Dec-03	Cyclic siloxane compositions for the release of active ingredients
Momentive Performance Materials GmbH	8-Sep-09	31-Oct-03	Formulations used for the treatment of substrate surfaces
Momentive Performance Materials GmbH	21-Jul-09	31-Oct-03	Linear polyamino and/or polyammonium polysiloxane copolymers I
Momentive Performance Materials GmbH	21-Jul-09	31-Oct-03	Linear polyamino and/or polyammonium polysiloxane copolymers II
Momentive Performance Materials Inc.	17-Jan-12	30-Oct-03	Process for manufacture of blocked mercaptosilane coupling agents
Momentive Performance Materials Inc.	10-Apr-07	12-Sep-03	Process for crosslinking thermoplastic polymers with silanes employing peroxide blends and the resulting crosslinked thermoplastic polymers
Momentive Performance Materials Inc.	23-Jun-09	3-Sep-03	Thermal conductive material utilizing electrically conductive
Momentive Performance Materials Inc.	7-Oct-08	8-Jul-03	Silica-rubber mixtures having improved hardness
Momentive Performance Materials Inc.	18-May-10	13-May-03	Softening silicone formulations for textile finishing
Momentive Performance Materials Inc.	20-Apr-10	16-Apr-03	Preparation of nanosized copper (I) compounds
Momentive Performance Materials Inc.	3-Jan-12	27-Dec-02	Homoepitaxial gallium-nitride-based electronic devices and method for producing same
Momentive Performance Materials Inc.	4-Mar-08	9-Oct-01	Nanosized copper catalyst precursors for the direct synthesis of trialkoxysilanes

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