

STRONG SELL RECOMMENDATION

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Manuel P. Asensio (212) 702-8805

CHROMATICS COLOR SCIENCES INTERNATIONAL, INC. (OTC Symbol: CCSI)

Closing Price:	\$8 13/16	Book Value Per Share:(4)	\$1.05
52-Week Trading Range:	\$18-4 11/64	LTM EPS:	(\$0.42)
Shares in Public Float:(1)	14.1 million	1997 Net Loss:	\$5.1 million
Shares Outstanding:(2)	14.8 million	1996 Net Loss:	\$4.4 million
Fully Diluted Shares:(3)	19.4 million	1995 Net Loss:	\$2.5 million

- (1) Adjusted for 3:2 split on February 13, 1998.
- (2) As of May 15, 1998.
- (3) Includes preferred shares, options and warrants.
- (4) Assumes the exercise of all money-in options and warrants.

SUMMARY AND RECOMMENDATION

Chromatics Color Sciences International, Inc. (OTC Symbol: CCSI) is a 14 year old company with 1997 operating revenues of \$10,500, no operating revenue in its most recent quarter and a \$170 million current market value. CCSI's market value is mostly, if not entirely, based upon last year's FDA approval and sales projections for its "new" Colormate III medical instrument product. The Colormate III is a transcutaneous, non-invasive bilirubinometer. A bilirubinometer is a device that measures the amount of bilirubin in the blood. Instead of using a blood sample, the Colormate III, like other colorimeters, uses an industrial color measurement device to test newborns for hyperbilirubinemia (infant jaundice) by measuring the yellowness of their skin. CCSI claims that U.S. hospitals spend approximately \$330 million to \$510 million per year on monitoring infant jaundice. CCSI also claims that the Colormate III's bloodless and painless test is unique and proprietary, and that it will capture a significant share of the

jaundice monitoring market. As a result, investors have been led to believe CCSI has enormous earnings potential.

Unfortunately CCSI's market estimates, and both its product and technology claims are false. The Colormate III's basic system was developed over 10 years ago for a failed Avon cosmetics sales program. The Colormate III's principle components are a 1989 Toshiba 512K computer and a standard color measurement instrument. The Colormate III does not contain any new technology and can be easily duplicated using standard, commonly available components. In fact, CCSI's FDA approval is based on the fact that the Colormate III is "substantially equivalent" to other existing colorimeters, including one that has been on the market for well over forty years. The Colormate III's clinical test only compared its bilirubin measurement performance to those of a physician's visual assessment. CCSI's Colormate III, like other colorimeters, can only be used to estimate the total amount of bilirubin in the blood. It does not estimate indirect or direct bilirubin levels, which are necessary and are commonly provided by blood tests.

CCSI's market size estimates are based on an exaggerated estimate of both the number of bilirubin tests performed per year and the cost of performing these tests. Bilirubin blood tests are done internally and cost hospitals \$1 to \$2 per test. The potential market for all bilirubinometers is extremely limited. Despite company claims to the contrary, a 1995 market research report titled "World Clinical Lab Analytical Instrument Markets" by Frost & Sullivan estimated that the world bilirubinometer market was less than \$2.5 million.

Only babies that appear jaundiced are tested for bilirubin. These tests require only a small drop of blood and the samples can be accumulated to allow large batches to be automatically processed simultaneously. In addition, most hospitals operate fully automated, computerized, high volume instruments that are used to conduct many different types of blood tests, including hyperbilirubinemia testing, in a fast, highly cost effective manner.

Since at least as early as 1981, transcutaneous bilirubinometry, using commonplace Colormate III-type colorimeters, has been extensively tested in hundreds of studies all over the world. The studies show that all of these devices are capable of providing good estimates of bilirubin levels. However, most of the studies also found that Colormate III-type instruments cannot be used as a substitute for precise blood bilirubin testing. There are countless colorimeters. Many of these devices are far more advanced than the Colormate III. Simply stated, the Colormate III is a very simple, easily duplicated device with extremely limited, if any, sales potential.

Despite having been approved for sale almost one year ago, CCSI has not sold a single Colormate III unit. We found no economic or scientific competitive advantage for CCSI or the Colormate III in the bilirubinometer market. Furthermore, it is absurd to claim Chromatics could ever earn sufficient earnings from this small \$2.5 million market to justify its current stock price. Excluding cash, CCSI possesses no valuable asset. We believe the only possible explanations for the company's excessive stock price are

management's misrepresentations about the Colormate III's sales potential. Therefore, we see little, if any, terminal value for CCSI's shares. We see no reason to buy or hold CCSI shares and strongly recommend that the shares be sold.

2. CHROMATICS' HISTORY AND BACKGROUND

CCSI was formed in 1984 to develop commercial applications for color science technology. During the ten years before forming CCSI, its principal officer and founding shareholder controlled two other companies with the same business purpose. Both of these companies failed. Despite these 24 years of combined experience in the same business, CCSI recently reported latest twelve-month sales and operating loss of \$9,700 and \$6.1 million, respectively. In fact, CCSI has failed to generate any material sales and suffered significant operating losses in every year the company has reported results.

CCSI describes itself as a "color sciences" company that possesses valuable intellectual properties ("IP"). CCSI's principals began by promoting the sales potential of its IP in the beauty and fashion industries. Each of CCSI's recent SEC filings contain a 9 or 10 page risk section describing its "lack of market penetration (sales)" in any industry and the failure of its many past marketing attempts. CCSI's record of uninterrupted business failures is impressive. Remarkably, none of CCSI's marketing efforts in 24 years have resulted in any earnings or even any materially significant business activity. CCSI's only working relationships have been with fraudulent stock promoters (see Investor's Associates section) and Mellon Bank's Drefyus mutual funds.

CCSI has successfully sold 12,413,248 shares either directly, or indirectly through a series of "back-door" registrations, to the public. CCSI's stock promotions have yielded the company approximately \$26 million. This yields an average price of \$2.10 per share for each share CCSI has sold. However, public investors purchased (or were sold) their CCSI shares at prices substantially higher than the average \$2.10 per share CCSI netted on these sales. A large portion of the difference between CCSI's \$2.10 per share selling price and the price ultimately paid by public investors was captured by insiders who have dumped their shares while CCSI made its promises

3. CCSI'S AVON DISPUTE

In June of 1988 CCSI leased 2,000 Colormate II System units to Avon. CCSI earned revenues of \$1.8 million in 1988, \$0.9 million in 1989 and \$0.5 in 1990 from the Avon deal. CCSI had no other revenues in any of those years. CCSI's three-year relationship with Avon ended in litigation in April 1990. As a result, in 1991 CCSI had a total of \$12,600 in revenues. In June of 1991 Avon returned the used Colormate II machines to CCSI. CCSI valued the 1,400 returned units that it claimed were resellable at \$700,000. CCSI's auditors ascribed no value to CCSI's alleged technology. In 1994 Avon settled the

lawsuit and paid CCSI approximately \$2.0 million, which CCSI spent on expenses including \$879,500 in officers' compensation. CCSI has been unable to sell any of the units. CCSI still carries the 10-year-old units at \$700,000 on its balance sheet.

CCSI claims that the Avon deal validated its technology claims. In fact, if anything it proves the exact opposite, the Colormate II System contains no proprietary CCSI color measurement technology. It uses a simple, commonly available industrial color measurement instrument. The steep and rapid revenue declines in each of the three years of the Avon deal, the termination of the deal and CCSI's inability to sell any of the units since then indicates that CCSI's alleged technology has no economic value. Furthermore, CCSI's continuing attempts to use the 10-year-old failed Avon deal to promote its stock, indicates both its lack of valuable business activity and legitimacy.

4. DESCRIPTION OF EXISTING NON-INVASIVE BILIRUBINOMETERS

Transcutaneous, non-invasive bilirubin measurement devices are easily manufactured and available worldwide. These devices have been proven to be accurate only as an estimate for bilirubin levels. We have found 121 studies dating as early as 1981 analyzing the use of non-invasive color measuring devices as transcutaneous bilirubinometers. There have been studies in the United States, Russia, India, China, Malaysia, Japan, Taiwan, England, Switzerland, Canada, New Zealand, Pakistan, Australia, Saudi Arabia, Singapore, and Mexico.

The studies used many different conditions to determine effectiveness of non-invasive color measuring devices as transcutaneous bilirubinometers. There were studies using white and black infants, white premature infants, low birth weight infants, children with viral hepatitis, infants in intensive care units, and infants in respiratory distress. Other studies used multiple site readings (placements of the color measuring device in different parts of the body), and home usage. Non-invasive bilirubinometers were also studied to determine the effect of irradiation and daylight. Readings on skinfolds have been extensively tested. Studies even included the measurements on the forehead when the babies were crying. While these studies have shown that the use of non-invasive transcutaneous bilirubinometers can serve as a useful screening test, most conclude that an accurate determination of serum bilirubin concentration is not obtainable.

5. CCSI'S INVESTORS ASSOCIATES ORIGINS

CCSI claims that it has been principally engaged in research and development since its formation 14 years ago in 1984. For at least 19 years before the IPO, Ms. Macfarlane had attempted and had failed to develop a business in the color industry. In 1991 CCSI was a private company owned 95% by Darby Macfarlane and 5% by her husband David Macfarlane with \$7,600 in product sales and \$10,500 in its bank. Yet, CCSI was able to

raise approximately \$5 million in its February 1993 initial public offering of 1,725,000 of units consisting of shares and warrants ("IPO"). This offering was sold by Investors Associates, Inc. ("IA").

CCSI use as a vehicle for insider dumping began even before its initial public offering. After CCSI signed its letter of intent but prior to the public offering, CCSI privately sold \$800,000 in notes to investors, including certain individuals who may have been related to IA's principals. These investors were repaid in full with 12% interest from the IPO proceeds. As compensation for their short-term loan, IA's private investors received 360,000 shares worth \$1.2 million at the IPO price and warrants to purchase another 360,000 shares at \$3.34. They received the stock and warrants at no cost.

In May of 1997 IA's securities license was revoked in several states, including California, Indiana, Alabama, New Jersey and New Hampshire. Its principals (including the author of CCSI's first BUY report) were barred from the securities industry. State and federal regulators charged IA with unauthorized trading, covering up customer complaints and fraudulent sales practices. Ultimately, 20 state securities regulators filed civil actions against IA and the attorneys general for New York and New Jersey commenced a criminal investigation.

CCSI's and Ms. Macfarlane's poor results were well known to IA. CCSI's prospectus disclosed Ms. Macfarlane's history with Personalized Colours, Inc. in 1974, and with Pink & Peach Computer Corp. in the years before CCSI. Both these companies were dissolved. It also disclosed CCSI's difficulties with Avon, its only paying customer. None of CCSI's corporate and management history could be used to support any future earnings. It is apparent that IA's decision to take CCSI public in 1992 at a \$20 million market value and to actively promote its stock in the aftermarket was not based on the reputation of its managers or its operating history. It is further apparent that IA must have had a large economic incentive to agree to such a transaction.

CCSI continued to deal with IA after it was exposed as a boiler-room operation. On May 6, 1996 CCSI filed a registration statement to register IA's underwriter compensation shares. On July 15, 1997 CCSI's Board of Directors extended IA's warrant expiration date. CCSI took these steps after IA's illegal activities were widely known and after 20 states had commenced actions against IA seeking to terminate its securities license.

6. STOCK SALES AND PROMOTION

Immediately after its 1993 IPO, CCSI had a total of 4,132,356 shares of common stock outstanding. Since its IPO CCSI has not sold a single share in an underwriting or through a public sale. Yet according to CCSI's most recent Form 10Q dated March 31, 1998, CCSI now has 14,820,604 shares of common stock and over 2.1 million stock options outstanding. Since its IPO, CCSI has issued 10,688,248 shares and raised approximately \$19.8 million by privately selling a series of securities that later become part of its freely

trading "public float". All of these securities were sold at deep discounts to prevailing market prices. After the private sale CCSI registered the discount shares to allow the holder to sell their shares to the public. CCSI's misleading stock promotion assisted its "private investors" in selling their shares to the public. The Company did not receive any of the proceeds from the sale of this stock to the public. These stock sales to the public were never disclosed.

CCSI's "back door" stock sales have been extraordinary. During the first quarter of 1998 while CCSI's stock was trading between \$9 and \$17, option and warrant holders purchased 929,992 shares at \$2.02 per share from the company. In 1997 CCSI's option and warrant holders purchased 3,061,763 shares at \$2.75 per share from the company. In April and June of 1996 CCSI sold a \$5 million lesser-of (bottomless or look-back) convertible. By September 30, 1996 CCSI had issued 2,686,514 publicly trading shares to the convert holders at an average price of approximately \$1.86 per share. Also in 1996 CCSI's option and warrant holders purchased 1,073,678 shares at \$2.75 per share from the company. From October 1994 to June 1995 CCSI also sold privately 2,700,000 shares for net proceeds of less than \$3.7 million or \$1.38 per share.

7. DESCRIPTION OF BILIRUBINOMETER MARKET

Bilirubinometers measure the amount of bilirubin concentrations in a patient. Bilirubin is a metabolic by-product produced by the breakdown of red blood cells. If the liver does not process bilirubin correctly, concentrations can build up in the blood and tissues. This condition is known as jaundice.

Newborns often have high levels of bilirubin in their blood because their livers at birth are not fully developed. However, they are not all automatically tested for hyperbilirubinemia. In fact, normally only babies that appear jaundiced upon visual examination are tested. Bilirubin levels in infants who are jaundiced may be monitored to ensure the condition is improving and there are no serious problems in the liver. Repeated testing is not normal. However, non-invasive bilirubinometers cannot replace the need for blood tests.

Bilirubinometers use spectrometric analysis of serum or plasma in order to analyze bilirubin concentrations. The devices are easy to use and are capable of producing results within five seconds. The machines are long lasting. The average cost for one machine is about \$3,450.

There are at least eight competitors in the bilirubinometer market. Advanced Instruments, Inc. account for approximately 65% of the world market share for bilirubinometers. Leica, Inc. is the second-leading competitor and has about 18% of the world market. Auer Bittmann Soulie AG, Erma, Inc., Mochida Pharmaceutical Co., Nakamura Medical Industry, Ltd., Oriental Instruments, Ltd. and Sanko Junyako Co., Limited account for the remaining 17% of the world market.

The bilirubinometer market is mature and stable. Most sales are to birthing centers, children's hospitals and hospitals providing neonatal care. World revenues for bilirubinometers in 1995 were approximately \$2.26 million. The United States accounted for approximately \$1.39 million in 1995 or 60% of the world market. Most sales in the United States are for replacement units only. Future growth for bilirubinometers will remain slow. Future growth is only expected in the developing markets outside of the U.S., Europe and Japan, such as China, India and Latin America.

8. CCSI'S PATENTS

CCSI claims it has developed certain "intellectual property rights in color analysis, calibration and verification in a number of fields including medical, biological, dental, cosmetic and materials testing." We have reviewed CCSI's four existing U.S. patents. CCSI's first patent No. 4909632 is merely a "Method for the selection of proper colors for individual wearers depending upon the underlying color of the skin of the wearer and the intensity thereof." CCSI's next two patents No. 5311293 and 5313267 are both for a "Method and instrument for selecting personal compatible colors." These patents both use a color measuring device, the "Hunter b value" and a basic computer with an output device. CCSI's fourth patent No. 5671735 is for a "Method and apparatus for detecting and measuring conditions affecting color." This patent also uses a color measuring instrument and the Hunter b and L value. The patent also claims that "A medical condition such as hyperbilirubinemia can be detected."

CCSI possesses no patents for any light production device, colorimeter, spectrophotometer or other instrument in the field of color identification or measurement. CCSI has merely developed applications using one of many inexpensive, existing, readily available color-measuring devices. Many of these devices have already been patented by other individuals for medical use. For example, Patent No. 4241738 issued December 30, 1980 is titled "spectral photometer for medical use in determining skin coloration." In addition, there are four existing patents held by other individuals that directly relate to the non-invasive detection of bilirubin. Patent No. 4029085 issued June 14, 1977 is titled "Method for determining bilirubin concentration from skin reflectance." Patent No. 4267844 issued May 19, 1981 is titled "Medical instrument for determining jaundice." This is "an electro-optical medical instrument ... for measuring the presence of bilirubin in skin tissue." Patent No. 5259382 issued November 9, 1993 is titled "Optical transcutaneous bilirubin detector," and Patent No. 5353790 issued October 11, 1994 is titled "Method and apparatus for optical measurement of bilirubin in tissue."

9. DESCRIPTION OF COLOR MEASUREMENT DEVICES

CCSI does not manufacture or possess any patents for a new color measuring device, nor any improvements to any existing device. There are hundreds of devices used to measure

color. The components necessary to manufacture a color measurement device are inexpensive and non-proprietary. We found over fourteen major companies that manufacture and supply color analysis instruments. These include Ancal, Analytical Spectral Devices, BYK-Gardner CVI Spectral Instruments, The ColorMouse, Colortron, Datacolor International, HunterLab, Minolta, Macbeth, Ocean Optics, Photo Research, Varian-Cary and X-Rite.

Color is a physical entity associated with light energy distributed at various wavelengths. Visible wavelengths are those between the violet and red ends of the spectrum—approximately 400 to 700 nanometers. Objects appear a certain color because of their selective absorption of different amounts of light within these visible wavelengths. Those wavelengths that are reflected and not absorbed are visible to observers.

There are many different color measurement instruments including colorimeters, spectrometers, and spectrophotometers. Some of these devices use non-contact and direct light reflectance. Some of these machines do not need a controlled, independent light source. Color analysis instruments are used in a wide variety of different industries. They are used in the textile and apparel, automotive, food, lumber, paint and coatings, plastics, pharmaceutical and paper industries. For example, color analysis is used to measure the darkening of potato chips due to changes or variations in processing.

Short selling involves a risk not associated with the purchase of stock including, but not only limited to, unlimited loss and stock borrowing risks.