

## Elevance Privately Held

Specialty chemicals and fuels from plant oils via metathesis  
 Last updated: December 8, 2009

### What you need to know

- Uses soy and canola oils as primary feedstocks, though testing others
- Strong relationship with Dow Corning that has already brought two soy-based personal care additives to market – and is likely to drive considerable growth
- Integrated biorefinery model is theoretically capital-light and could yield several high-value product lines
- Combination of simple chemistry, low capital costs, high-value products, and seasoned management team is a formula for considerable growth in coming years
- Other large firms that produce or use materials for personal care, surfactants, lubricants and additives, or antimicrobials should engage now to explore renewable product lines

 **luxtake: strong positive**

### Scorecard

Name	Score	Comment
Technology/solution value	4	Combination of simple chemical processes combined with capital-light manufacturing yields a disruptive process
Addressable market size	5	Combining biodiesel, waxes, lubricants, renewable diesel, glycerin, and other specialty chemicals yields tens of billions in opportunity
Competitive landscape	3	Renewable chemicals space steadily becoming more populated, though firm has scale and cost advantage over most
Barriers to growth	3	Though feedstocks are abundant now, may incur setbacks in using food-based feedstock oils such as canola and soy
IP position	5	Metathesis IP licensed from Cargill-Materia; applications and process look tightly protected, with little room for overlap
Regulatory factors	4	Renewable petrochemical replacements produced using an environmentally benign process
Management team	5	Each member has 15 or more years experience at oil and petrochemicals companies like BP, Innovene, Amoco, Ineos, NatureWorks
Partnerships	4	Ongoing collaboration with Cargill-Materia, Dow Corning, Tetramer Technologies, as well as United Soybean Board and SaskCanola in Canada
Momentum	5	Despite being only two years old, has amassed \$20 million in revenues; high-profile partnerships constantly yielding successful product launches
Other	5	Unlike many renewable chemicals producers, does not require enormous capital expenditure to implement integrated biorefinery model

*Ratings are on a 1 to 5 scale from 1 (very unfavorable) to 5 (very favorable). For full scorecard explanations, view this profile online at [portal.luxresearchinc.com](http://portal.luxresearchinc.com).*

### Key Metrics

Name	Category	Value	Date	Comments
cost	specialty chemicals	\$1.5- \$2/treatment	December 8, 2009	Andy claimed that production costs were equal to those of the chemicals' petroleum counterparts
capacity	specialty chemicals	100- 150tons/year	December 8, 2009	Andy said the firm was making "truckloads" of chemicals at a time

*Italics indicate Lux Research estimated value*

### History

In 2005, Robert Grubbs, Yves Chauvin, and Richard Schrock jointly received the Nobel Prize for their research in olefin metathesis - a process used to make many industrial chemicals, polymers, and pharmaceuticals - and ruthenium-based catalysts needed to complete this reaction. Materia Inc., a company that emerged from Robert's catalyst research, partnered with Cargill to build on this technology using renewable oils as a feedstock. Finally, in conjunction with a \$40 million investment from TPG in 2007, Cargill and Materia handed over the technology to Elevance in exchange for equity.

## Technology

According to Andy, Elevance is exploring the use renewable oil feedstocks such as canola, soy, palm, and ultimately jatropha or algae oils in the production of specialty chemicals and fuels. He explained that the production process is a series of simple chemical reactions catalyzed by a homogeneous ruthenium catalyst at low temperatures and pressures using off-the-shelf equipment. Currently, Elevance uses a contract manufacturer for its current production scale, but Andy explained that the reactors used in these isolated processes are widely available (in a variety of sizes) and capital-light for contractors to implement.

Andy said that Elevance is in discussions to build a commercial-scale integrated biorefinery, achieved by partnering with and retrofitting existing biorefineries with metathesis and hydrogenation reactors in a "capital light" model. In its process, renewable oils first undergo a pretreatment in the front end, priming the fatty acids for metathesis, and are combined with some additional reactants. In the next chamber, the ruthenium catalyst (which is later recovered) catalyzes metathesis yielding a combination of shortened esters, saturated esters, and olefins. The next step separates the olefins and esters into two different reaction pathways. The esters undergo transesterification, yielding glycerin, saturated and unsaturated esters, biodiesel, and other specialty chemicals. The olefins can be sold/utilized into a variety of markets (lubricants, oilfield applications, surfactants, many others) or undergo hydrogenation to yield jet fuel and renewable diesel.

## Strategy and markets

Andy said that the firm is constructing a demonstration scale facility (a model of the integrated biorefinery) in North America that will produce "truckloads" of chemicals, to be completed in late 2010. Its focus, according to Andy, is to develop technology with its partners, especially in performance waxes and oils, lubricants and additives, antimicrobials and certain biorefinery products. It is looking to license out its technology for applications that are outside of these areas in order to accelerate commercialization.

Through a partnership with Dow Corning, Elevance already has two products successfully on the market in performance waxes and oils; both are soy-based additives for the personal care industry.

## Key Issues

### Key Issue: Research and development partners

What they said	What we think
Andy mentioned that Elevance had research partners for feedstock development, and Cargill-Materia for process optimization and catalyst technology refinement. Additionally, it had previously partnered with Dow Corning and successfully commercialized two products, a soy-based structuring agent and a soy wax blend used in skin care, color cosmetics, hair care, and underarm products.	The speed with which these two products were commercialized with Dow Corning is certainly a testament to the efficiency of the research team involved. This early success also proves how important this partnership is - needless to say, Elevance and Dow Corning are likely to jointly commercialize several more products in personal care, and perhaps in some other areas, as well. However, Elevance should be careful not to limit itself to one such partner. Given the head start the company has on many of the biomaterial companies out there, it should bring on at least one other large-scale partner like Dow Corning (such as BASF or Solvay). Such a move will further accelerate its commercial development, and more importantly, prevent its success from being entirely dependent on one large partner.

### Key Issue: Feedstock development

What they said	What we think
Andy said that Elevance has established partnerships with the United Soybean Board and SaskCanola and several other industry groups to develop ways to make the feedstocks "more tenable to our process."	<p>Many "renewable" companies these days claim feedstock flexibility, citing the ability to make minor changes to a microbe or a process to yield a range of end products. However, most of these companies, such as Mascoma (see the <a href="#">October 13, 2009 LRBJ</a>) or Cara Plastics (see the <a href="#">November 10, 2009 LRBJ</a>), have only fully tested and developed one or two feedstocks, with the others being "theoretically possible." In fact, the only technologies that are truly feedstock agnostic seem to be thermochemical methods such as gasification - Diversified Energy is a prime example (see the <a href="#">November 10, 2009 LRBJ</a>).</p> <p>From what Andy revealed, most of the research underway is geared towards improving the yield of end product from soy and canola. The potential ramifications of the omnipresent "food versus fuel" debate, combined with the fact that most other renewable materials companies are <i>also</i> using soy and canola oils suggest potential spikes in these feedstock costs in the future, either from rise in demand or regulation or both. Elevance should accelerate its research efforts for alternate feedstocks, such as waste food oils and fats, to hedge against any potential backlash down the line.</p>

## Vital Stats

Statistic	Value	Date	Comment
Employees	50	Oct 2009	
Revenue	<i>\$20 million</i>	2008	
Cash	<i>\$5 million</i>	Oct 2009	Estimate \$200,000 annual burn per employee, and \$5 million in construction costs for its demonstration plant
Profitable	No	Oct 2009	

*Italics indicate Lux Research estimated value*

## Key relationships

Partner	Type	Importance	Comment
Dow Corning	Development partner	Major	Commercialized two products through this partnership
Cargill	Technology partner	Major	Global feedstock contract with Elevance; also licensed olefin metathesis technology
Cargill	Investor	Major	Owns minority stake in company
Materia	Development partner	Major	Ongoing technology development with the company
Materia	Investor	Major	Ongoing technology development with the company; minority investor
TPG	Investor	Major	Majority investor in Elevance

## Key competitors

**Direct competitors:** LS9, Amyris Biotechnologies, Solazyme

**Indirect competitors:** Catilin, Hero BX, BlackGold Biofuels

### Organization Information

Elevance

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[www.elevance.com](http://www.elevance.com)

**Business model(s):** Sells product; Licenses technology

**Stage of development:** Introduction

**Technologies and materials:** Biodiesel; Specialty chemicals; Diesel

**Products:** Personal care products

**Applications:** Soap and shampoo

Interviewed: Andy Shafer (Executive VP Sales and Market Development)

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