

**TITLE**  
**Efficient and Selective Conversion of High Density Polyethylene into Valuable Hydrocarbons**

**CASE NUMBER**  
**C16244**

**VALUE PROPOSITION**

- » The system upcycles high density polyethylene (HDPE) and yields valuable industrial chemicals that can be sold at a high profit margin.
- » Initial runs have demonstrated that HDPE can be converted into xylene.

**UNMET NEED**

- » 35.4 million tons of plastic municipal solid waste (MSW) were generated in the U.S. alone in 2017.
- » The overall rate of plastic recycling in 2017 was just 8.4%. Current chemical recycling methods are inefficient with respect to energy usage and do not generate consistent products.
- » There is a large need to improve the recycling processes for plastics and for greater attention toward their end-of-life management.

**TECHNICAL OVERVIEW**

- » Johns Hopkins researchers have developed a process for upcycling plastics waste that employs a more active, selective, and stable Zeolite catalyst.
- » The upcycling process with this Zeolite catalyst generates valuable products from the chemical recycling process, such as benzene, toluene and xylene (BTX).

**STAGE OF DEVELOPMENT**

- » The researchers have fully developed and tested the catalyst.

**ASSOCIATED INVENTORS**

*Chemical and Biomolecular Engineering*  
*Whiting School of Engineering*  
**Chao Wang, Ph.D.**  
**Pengfei Xie, Ph.D.**

**TECHNOLOGY CLASSIFICATION**

- » Energy
- » Engineering
- » Industrial

**CONTACT INFORMATION**

**Lisa Schwier**  
Sr. Technology Licensing Associate  
667-306-8231  
[lschwier@jhu.edu](mailto:lschwier@jhu.edu)



**ASSOCIATED REPORTS OF INVENTION (ROIs) AND INTELLECTUAL PROPERTY (IP) FILING NUMBERS**

ROI#	TITLE	STATUS	PRIORITY DATE	IP FILING NUMBERS
C16244	Efficient and Selective Conversion of High Density Polyethylene into Valuable Hydrocarbons	Pending	5/20/2020	<u>Int'l Publ. No. WO 2021/236971</u>