Cluster 06: Composites, project T16005a
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# ADVANCED RECYCLING FOR SUSTAINABLE TIRES

## Sustainable future of tire manufacturing

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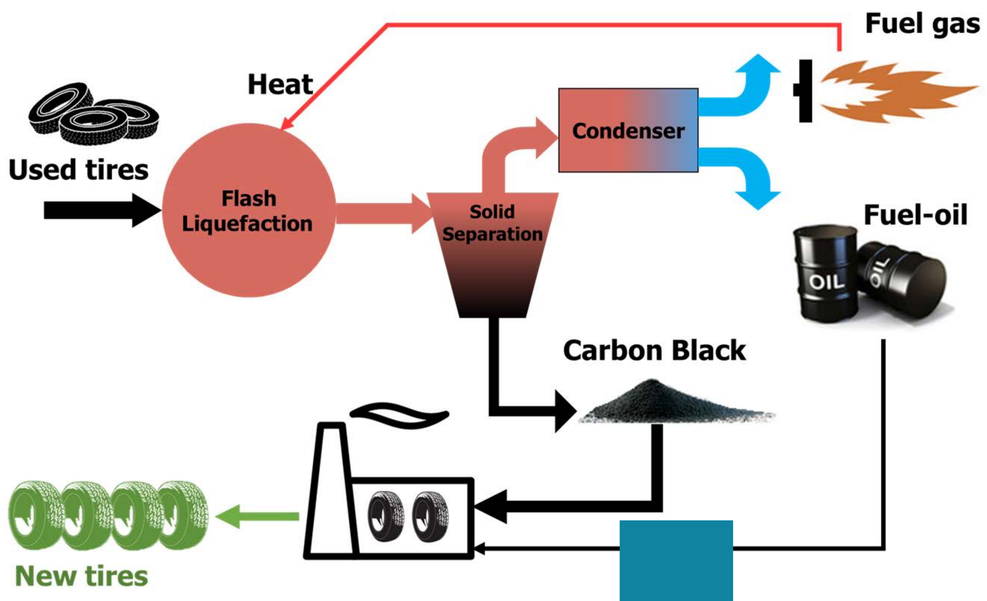
## Introduction

Diminishing oil resources and the need of fulfilling the growing energetic demands is a major socioeconomic global issue. Each year around 2.4 billion tires are produced world wide corresponding to 17million tons of waste tires[1][3]. They pose a feedstock rich in C and H, therefore, a potential source of fuels and high value raw materials.

## Background

- 12 MT/yr of carbon black is produced[2].
- 73% of carbon black is consumed in tires[2].
- 4.5 MT/yr of high value carbon black is scrapped with used tires[3].
- Carbon black can be recovered by pyrolysis.
- Conventional pyrolysis process result in low quality carbon black

## Process




## Product development approaches

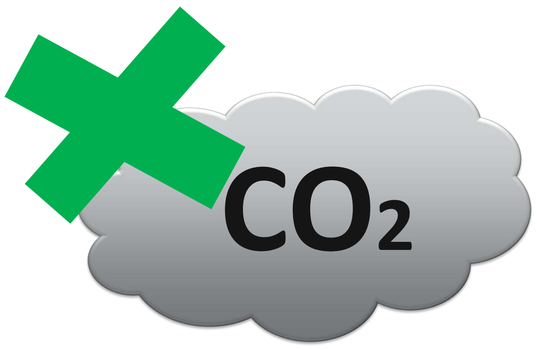
- Process parameter optimization
- Physical treatments
- Chemical treatments

**Limitations**

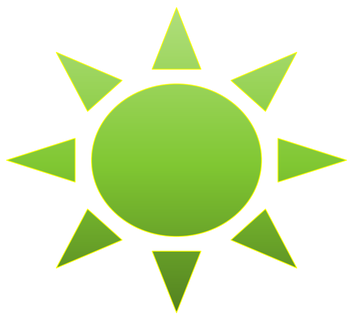
- Large cluster size
- Reduced surface activity
- Low tire reinforcement


## Benefits

Higher recycling rates




Green carbon



Green energy

Sustainable tires

## References

1. Czajczyńska, D., et al., *Use of pyrolytic gas from waste tire as a fuel: A review.* Energy, vol. 134, pp 1121-1131, 2017.
2. *Worldwide Carbon Black Market Over 12 Million Metric Tons by 2015*. http://carbonblacksales.com/worldwide-carbon-black-market-12-million-metric-tons-2015/
3. *Carbon black going "Green"*, in *Recycling product news*. June 2017. http://www.recyclingproductnews.com/article/26231/carbon-black-going-green

Project progress (in years):

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