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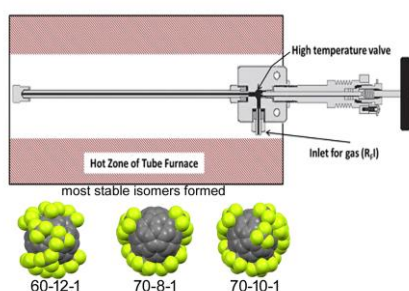
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# Versatile Metal Reactor for High-Temperature and High-Pressure Trifluoromethylation of Carbon-Rich Substrates

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## Graphical abstract



## Highlights

- Versatile and robust metal reactor for high-temperature trifluoromethylations is designed, built, and tested
- Reaction with anthracene yields polytrifluoromethylated dihydroanthracenes
- Predominant formation of the most thermodynamically stable isomers of polytrifluoromethyl fullerenes C<sub>60</sub> and C<sub>70</sub> is observed making this method a preferred and safe alternative to existing methods

## Abstract

A new, easily scalable reactor for trifluoromethylation of carbon-rich thermally stable substrates has been designed, built, and tested in this work. This reactor can withstand temperatures up to 520 °C and pressures up to 10<sup>6</sup> Torr (20,000 psi). Several proof-of-concept experiments with polycyclic aromatic hydrocarbons and fullerenes were performed and the results: product

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