

Calculate the number of molecules in 5.47 mg of dimethyl ether (C₂H₆O).

Solution:

$$n(\text{CH}_3 - \text{O} - \text{CH}_3) = \frac{0.00547\text{g}}{46.07\text{ g/mol}} = 0.0001187323\text{ mol}$$

$$N = n \cdot N_A = 0.0001187323\text{ mol} \cdot 6.02 \cdot 10^{23} = 7.147 \cdot 10^{19}$$

Answer: $7.147 \cdot 10^{19}$

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