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## **Peltier Effect Based Temperature Controlled System for Dielectric Spectroscopy**

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The temperature control system was designed and built for application in dielectric spectroscopy. It is based on dual-stage Peltier element that decreases electrical power and no cryogenic fluids are required. A proportional integral derivative controller was used to keep the temperature stability of the system. Temperature of the system was measure by a Pt100 temperature sensor. Effect of vacuum isolation and water cooling on accuracy and stability of the system were also studied. With incorporation of vacuum isolation and water cooling at 18 °C, temperature of the sample under test can be controlled in the range of -40 °C to 150 °C with uncertainty  $\pm 0.02$  °C.

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