Integrated, Graphene-based RFID tag on Flexible substrate

Background
Graphene is a promising 2D material which has unique electrical and mechanical properties. The high electron mobility of graphene promotes it for high frequency applications. Metal-insulator-graphene (MIG) diode has been reported using CVD graphene process by our group in conjunction with AMO GmbH. The graphene diode provides an alternative solution for the limited capabilities of the graphene field-effect-transistors.

In this work we'd like to design a fully integrated RFID tag using the graphene diode together with an integrated antenna on flexible substrate for medical application.

Tasks (The tasks can be divided into three main milestones)
• Literature survey and technology assessment (8 weeks)
  • Simulations for the integrated antenna and circuit
  • Make a 1st design review
• Fabrication (8 weeks)
  • Fabricate the designed devices
  • Characterization and modeling of the new devices
  • Make the 2nd design review
• Verifications and documentation (8 weeks)
  • Make the final design review
  • Documentation (thesis & publication)

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