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**Electromagnetic Heat Transfer in Artificial Materials** LILIA WOODS, DAVID DROSDOFF, University of South Florida, ANH PHAN, University of Illinois and Institute of Physics, Hanoi — Electromagnetic energy exchange has found promising new opportunities by greatly enhancing the heat transfer between bodies via radiation in the near-field regime. The greatest heat transfer occurs when the bodies support surface plasmons or polaritons that share the same resonant frequency. It has been shown, however, that 2-D materials such as graphene can have their surface plasmons tuned by modifying the chemical potential and temperature. This allows for tuning its resonance with other systems. In this talk, we investigated the electromagnetic radiation in metamaterials characterized by a strong magnetic response. We study theoretically Pendry-like and magnetically active metamaterial/graphene composites. The possibility for enhancing or inhibiting the heat transfer via the graphene properties is investigated.

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